



**PROMOTING INDUSTRIAL ZONES AND INVESTMENT MOBILIZATION**  
**USAID WB/G SO1: EXPANDING ECONOMIC OPPORTUNITIES**  
**CONTRACT No. 294-C-00-00-00071-00**

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<p><b>Assessment of Industrial Infrastructure Damage in the West Bank and Gaza</b></p>
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SUBMITTED ON

**JULY 2, 2002**

TO THE

**USAID MISSION TO THE WEST BANK AND GAZA**  
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BY

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## 1.0 EXECUTIVE SUMMARY & RECOMMENDATIONS

The PRIZIM Assessment Team, consisting of five engineers from the Louis Berger Group and three TSG PRIZIM team members, was assembled on extremely short notice at the request of USAID to assess damage to industrial infrastructure and facilities after the IDF incursions into the West Bank and Gaza. The team arrived in Jerusalem between the 11<sup>th</sup> and 12<sup>th</sup> of June 2002. The Team was tasked with visiting the nine principal Palestinian cities and towns to;

1. Examine direct damage to the infrastructure of existing Industrial Areas and estimate the cost of repairs or replacement.
2. Assess the need for upgrading infrastructure in existing Industrial Areas.
3. Investigate the need for new Industrial Areas and estimate the costs to develop them.
4. Assess the needs for Repairs, reconstruction or replacement in individual industrial enterprises and estimate the costs for such action.
5. Examine the necessity and advisability of relocating existing businesses from their current locations to designated industrial areas and provide cost estimates for the cost of new facilities to accommodate them.

After a first day orientation meeting, the entire Team started work with a visit to Hebron. Subsequent to the two days spent in Hebron, the Team broke into three teams to facilitate visiting all of the remaining cities in the time allocated beginning on 17<sup>th</sup> June. From the first day of visits, the teams could not follow the scheduled program due to road closures and continuing incursions by the Israel Defense Force. For the first few days it was possible by changing plans from city to city to maintain the rate of inspection visits, even if not in the order given. However, by the 22<sup>nd</sup> of June, the Teams were denied access to all areas that had not been visited, with the exception of Ramallah. The planned visits to Ramallah were concluded. Since then there has been no access to the remaining five cities, so that those physical surveys were not conducted by the Team.

A concerted effort was made to gather data by telephone, with mixed results. Despite willing cooperation from the parties contacted, it was difficult to obtain specific information. This was made even more difficult by continuing curfews, which made contacting officials especially difficult. Often telephone interviews have been conducted with engineers and officials in their homes without access to their files and offices or without being able to assemble staff members to provide specific information. As a result, detailed, verifiable information has been gathered from only four areas, Hebron, Gaza, Ramallah and Jericho. Generalized assessments of the other areas have been attempted using the information gathered by telephone surveys and a brief visits (visits consisted of only a few hours in Jenin and Bethlehem). As a result of the two different levels of coverage of Palestinian cities, presentation of the observations and recommendations for action and further investigation are presented in two sections covering first the cities adequately visited, and second, more generalized observations covering the remaining sites.

Following the completion of these assessments, the Team prepared a synthesis of findings in the form of a slide presentation that was delivered to USAID in Tel Aviv on July 3, 2002. This presentation, which is reproduced below, presents the rationale for project prioritization and selection, and provides cost estimates for recommended interventions. The remainder of this document provides the detailed assessment data and background analysis on which the Team's synthesis was based. It includes a discussion of the recommendations to meet the perceived priorities for each of the areas considered by the Team. Tabular summaries of the recommended project elements are also presented. It is supported by calculation sheets illustrating the approaches followed in preparing the estimated cost of the elements of the recommendations.

It must be mentioned that no efforts to revive and expand industry can have any positive effects until the curfews and closures cease. No substantial amounts of economic activity can be sustained without the ability of workers to get to work and businesses to freely access sources of supply and have the freedom to ship and deliver their products to markets. It is the sincere hope of each member of the Team that those conditions may be met in the near future, and that this study may contribute in a meaningful way toward the development of industry in the West Bank and Gaza.



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# **Industrial Repair, Reconstruction and Rehabilitation Recommendations**

William Cain, PRIZIM Project COP

July 3, 2002

# Assignment

- **Determine post-IDF incursion industrial reconstruction and upgrade needs in nine communities:**

Hebron	Ramallah	Tulkarem
Jericho	Nablus	Qalqilia
Bethlehem	Jenin	Gaza

- **Recommend priority interventions**
  - Repair/reconstruction of individual factories
  - Repair/reconstruction of industrial areas
  - Upgrading of existing industrial areas
  - New industrial areas & relocation assistance

# Team Assignments

## Consult with or Visit

1. Mayor/Chamber of Commerce
2. Industrial Areas (existing & proposed)
3. Damaged factories
4. Factories to be relocated

## Identify & Verify Needs

1. Industrial Area repairs & reconstruction
2. Industrial Area utility up-grades
3. New Industrial Area sites
4. Factory repairs & replacements
5. Relocation of factories

# Activities Completed

- **Hebron, Ramallah, Gaza, and Jericho**
  - Multi-day visits to industrial sites and factories
  - Consulted local gov't, chambers, and firms
  - Evaluated industrial needs
- **Bethlehem and Jenin**
  - Limited (½ day) access to sites
  - Supplemented with telephone interviews
- **Nablus, Jenin, Tulkarem, and Qalqilia**
  - No access to sites (closures/curfews)
  - Reliance on telephone interviews

# Approach

- **Prioritize interventions**
  - Reconstruction → Upgrades → New Projects
- **Focus on near-term impacts**
  - Support existing industrial clusters that are most likely to use infrastructure
- **Maximize limited budget**
  - Supply shared infrastructure that supports multiple industrial users
- **Keep realistic expectations**
  - Avoid over-reliance on parallel implementation of major off-site infrastructure & feeder utility projects

# General Findings

- **Low levels of direct damage to industry**
  - Especially in WB; Gaza damage pre-dates incursion
- **Assistance impacts limited by low levels of pre-incursion capacity utilization**
  - Firms may not recover in current environment
- **Significant repairs undertaken by firms over the past two months**
  - Viable businesses investing in repairs
- **Existing industrial base remains under-served by infrastructure**
  - Supporting infrastructure investment has both near- and long-term benefits



# Criteria for Recommendations

- **Can be completed quickly (<12 months)**
- **Will have a positive impacts**
  - Production capacity
  - Employment
  - Environment/health
  - Rationalize municipal zoning
- **Provide utility upgrades to existing users**
- **No additional infrastructure needed to function**
- **High visibility for USAID**

# Factory Repairs and Reconstruction

Town	Factory	Item	Amt	Cost
Hebron (Al Fahf)	Al Rahman Factory (cement blocks)	Casting Yard Equipmt	1,800M <sup>2</sup> 4	27,000 74,000
Nablus (East/Balata)	K		1 <sup>2</sup>	180,000 177,000
Bethlehem (Beit Sahour)			1 <sup>2</sup>	45,000 70,000
Bethlehem (Cinema Sq)			1 <sup>2</sup>	70,000 130,000
Jenin ( )				0,000 0,000
			Building Equipmt	27,000 295,000 451,000
			Total	773,000

**Recommend funding of  
all factory repairs and  
reconstruction,  
following individual  
assessment &  
negotiation**

# Industrial Area Repairs and Reconstruction

Town	IndArea	Item	Amt	Cost
Hebron	Al Fahf	Hywy 35 connection, telephone cable (400pr)	40 m	60,000
			50 m	10,000
Bethlehem			41 ea	7,175
Gaza			All	
			TOTAL	

**Recommend funding of  
all industrial area  
repairs and  
reconstruction, with  
GLIE solution for Gaza**

# Upgrade Project Site Selection

Potential Sites	Industrial Base	Strong Partners	Suitable Projects
Hebron	Hebron	Hebron	Hebron
Jericho			
Bethlehem			
Ramallah	Ramallah	Ramallah	Ramallah
Al Bireh	Al Bireh	Al Bireh	Al Bireh
Nablus	Nablus		
Jenin	Jenin		
Tulkarem			
Qalqilia			
Gaza	Gaza	Gaza	

# Potential Upgrade Projects

	Hebron	Ramallah	Al Bireh	Jenin	Total
<b>Sewage</b>	1,410,150		244,200	1,703,800	3,358,150
<b>Water</b>	590,000				590,000
<b>Electricity</b>	844,260	392,000	1,605,000		2,841,260
<b>Roads</b>	8,152,192	6,520,056	3,592,840		18,265,088
<b>Storm Water</b>			440,000		440,000
<b>Totals</b>	10,996,602	6,912,056	5,882,040	1,703,800	25,494,498

# Recommended Industrial Area Infrastructure Upgrades

Town	Item	Cost	Mos
Hebron	- Al Maslakh Substation	844,260	12
	- Road Upgrade (3.5 km) (including sewer, water, lighting, storm run-off)	<u>2,310,812</u>	12
	TOTAL	<u>3,155,072</u>	
Ramallah	- Substation Upgrade	392,000	12
	- Road Upgrade (8.4 km) (including sewer, water, lighting, storm run-off)	<u>6,520,056</u>	12
	TOTAL	<u>6,912,056</u>	
Al Bireh	- New Substation	1,605,000	12
	- Main road upgrade (3.3 km)(including sewer, water, lighting)	2,102,250	12
	- Stormwater network	440,000	9
	- Extend sewage system	<u>244,200</u>	8
	TOTAL	<u>4,391,450</u>	

# Recommended New Industrial Area Construction

- **Gaza**: a new industrial area is required to serve the industrial infrastructure destroyed over the past 18 months
  - 2/3 of all Palestinian industrial infrastructure damage identified

# Cost-Level Options

- **\$5 mil: all factory and industrial area repairs and reconstruction, and up-grades at Hebron industrial area**
- **\$10 mil: \$5 mil PLUS up-grades at Ramallah industrial area**
- **\$12 mil: \$10 mil PLUS up-grades at Al Bireh industrial area**



# Next Steps

- **Determine industrial component of available reconstruction funding**
- **Select implementation mechanisms**
  - Design
  - Supervision
  - Local construction contracting
- **Engage Palestinian partners in planning & implementation process**

## 2.0 RECOMMENDATIONS AND PRIORITIES

### 2.1 CITIES SURVEYED

#### 2.1.1 HEBRON

##### 2.1.1.1 Repair and Replace Enterprise Plant & Equipment

- Fund the replacement of Equipment and inventory and the re-building of the casting yard at the Block Plant by the Highway 35 intersection.

##### 2.1.1.2 Industrial Area Repairs & Re-Construction

- There is nothing significant to recommend at this time.
- When the situation stabilizes funds should be used to clear and repair the blocked road connection to Highway 35 and to repair severed utility lines.

##### 2.1.1.3 Industrial Area Up-grades

- Construct an East – West “Spine Road” in Industrial Area.
- Establish a central settlement pond for the wastewater from the various Stone Products plants located near the main road and install piping to centrally collect wastewater.
- Establish a subsidized enterprise to manage and operate the sludge collection operation and produce economically viable products from the sludge (Such as architectural stone or as fertilizer). A study should be made of the most financially viable and environmentally responsible method of using this by-product. The size of this industry throughout the West Bank makes this a common problem in most areas.
- Upgrade the Al Maslakh Substation including provision of anew transformer and fencing.
- Upgrade overhead electrical distribution lines in the Industrial Area.
- Upgrade underground electrical distribution lines in the Industrial Area.
- Build new secondary roads in area opened up by the “Spine Road.”
- Upgrade existing roads in built up areas of the Industrial Area.
- Purchase bins and trucks to upgrade solid waste collection.
- Improve water supply by drilling two wells and upgrading the distribution system in the Industrial Area.
- Add additional sewers and replace old piping.
- Install street lighting along new “Spine Road.”
- Install storm sewers along new roads.

##### 2.1.1.4 Relocate Facilities and Enterprises

- Consolidate industries into the industrial park. The recommended construction of the new spine road which is already approved and permitted will open access to considerable areas in the existing industrial park which are presently under utilized. It is suggested that this may well be sufficient for the contemplated relocations.
- Build Workshop Complexes to accommodate relocation of small (5 or less employees) presently interspersed throughout the city. These can facilitate concentration of certain types of businesses such as automotive repair and support, steel and aluminum fabricators, furniture makers etc.

##### 2.1.1.5 New Industrial Areas

- Interest has been expressed in establishment of a new and separate light industrial park. It is believed that plans for any new industrial area should be reassessed after the bulk of the existing area is open and utilized for desired re-location of industry out of present commercial and residential areas.

#### 2.1.2 RAMALLAH

**2.1.2.1 Repair and Replace Enterprise Plant & Equipment**

- Fund repairs at the two enterprises damaged in Ramallah.
- Fund repairs at the Al Bireh abattoir.

**2.1.2.2 Industrial Area Repairs & Re-Construction**

- There is nothing significant to recommend at this time.

**2.1.2.3 Industrial Area Up-grades****Ramallah**

- Upgrade roads in accordance with the detailed plan already developed by the Municipality.
- Upgrade sewer lines in accordance with the detailed plan already developed by the Municipality.
- The planned installation of street lighting is recommended. It is urged that as a minimum underground wiring for the lighting system be installed in conjunction with the road upgrades. Poles and lights could be installed later if financial constraints precludes their installation when the roads are built.
- Coordination should be done with JWU to see if upgrading the water distribution system is feasible at this time in conjunction with the other road work.
- Provide new 10 MVA Transformer
- Upgrade Existing Substation Transformer.
- Upgrade Water distribution system.

**Al Bireh**

- Design and install storm drainage system across industrial area.
- Extend the existing liquid waste system to new portion of Industrial Area.
- Upgrade main roads in Industrial Area including the road to abattoir.
- Provide two new Electrical Substations.
- Upgrade Electrical feeder lines.
- Install street lighting on main road in new portion of Industrial Area
- Upgrade and resurface existing roads as needed.
- Upgrade water distribution system.

**2.1.2.4 Relocate Facilities and Enterprises****Ramallah**

- Construct facilities and relocate 40 small automotive repair and service businesses to the Industrial zone.

**Al Bireh**

- Construct Facilities to relocate the 70 or so small enterprises currently identified by the Municipal Engineer as operating in illegal areas and assist in re-location costs.
- Construct facilities to relocate 65 small construction material and support businesses to the Industrial zone.

**2.1.2.5 New Industrial Areas**

- The industrial area in Beit Tunia has been zoned but not developed. Evaluate if development of this is necessary as part of a total regional strategy.

**2.1.3 JERICHO****2.1.3.1 Repair and Replace Enterprise Plant & Equipment**

- Fund the cost of replacing / refurbishing equipment in the battery factory.

**2.1.3.2 Industrial Area Repairs & Re-Construction**

- No developed industrial area at present.
- 2.1.3.3 Industrial Area Up-grades**
- The 9.0 kilometer road planned by the municipality between the Jerusalem road and the industrial area is currently needed to provide good access to the Steel Plant, the only major industry in the area. While eventually a divided (by median) road should be provided to connect the Industrial Estate it is suggested that one side only be built in the near future to serve the steel plant and serve as a magnet for future development.
  - The electrical supply will have to be augmented and extended around the industrial zone.
  - The current water distribution network ends about 3.0 kilometers from the industrial Estate. New wells should be provided in the area if possible as the current supply is required for the city..
  - Fund the upgrade of the electrical lines from 6.6 kV to 11 kV.
  - Fund the upgrade of the supply transformers and switchgear to the smelter and the construction of a new 33 kV, double circuit line to the smelter.
- 2.1.3.4 Relocate Existing Facilities and Enterprises**
- Consolidation of industry into the industrial park. The few viable enterprises in Jericho seem eager to relocate. It is suggested that a detailed study be made of out of area enterprises which might be interested in moving to Jericho if the Industrial Area is developed.
  - Given the small nature of many enterprises it is suggested that structures be set aside for small operations consisting of connectable bays of approximately 100 m2 each. This should also be attractive to the support firms providing items to the agricultural industry in the Jordan valley.
- 2.1.3.5 New Industrial Areas**
- As noted, the municipality is interested in developing an Industrial Estate and at present the reinforcing steel plant is occupying a small part of this area.
  - At present the Municipality has done very little planning for this site. It is suggested that detailed feasibilities be undertaken in conjunction with the National Study of the possibility of an Industrial City. These two can and should be closely coordinated to avoid needless duplication and maximum integration of effort.
- 2.1.4 GAZA**
- 2.1.4.1 Repair and Replace Enterprise Plant & Equipment**
- Fund construction of replacement facilities for those factories destroyed during the incursions and the occupation by the IDF. Repairs should be funded for damages to the infrastructure.
- 2.1.4.2 Industrial Area Repairs & Re-Construction**
- There is nothing significant to recommend at this time.
  - When the situation stabilizes funds will be needed to clear and repair the damaged industrial areas and industries that are located outside the GIE.
- 2.1.4.3 Industrial Area Up-grades**
- Provide new poles, insulators, fused cutouts, transformers to supply power to industries in the existing industrial areas.
  - Fund the construction of the 220 kV transmission line from the North Substation to the South Substation.
  - Fund the construction of the new South Substation
- 2.1.4.4 Relocate Facilities and Enterprises**

- Consolidation of industry into a new industrial park.
- 2.1.4.5 New Industrial Areas**
- The new proposed municipal industrial area is planned to be built in an area that is owned by an Islamic group. The group requires a significant return on the profits. The preliminary design is being done by an Egyptian firm. No assistance is recommended for the proposed new municipal industrial estate.

## **2.2 CITIES SURVEYED BY TELEPHONE**

### **2.2.1 BETHLEHEM**

(NONE)

### **2.2.2 NABLUS**

#### **Repair and Replace Enterprise Plant & Equipment**

- None Quantified at this time. Inspection needed.

#### **2.2.3.4.2 Industrial Area Repairs & Re-Construction**

- Repair damage to the water distribution system in the Existing Industrial Area. Current unverified estimate of damage is US \$ 1.3 million. This seems very high for only the Industrial Area.
- Repair the Electrical distribution system in the Existing Industrial area. Current unverified estimate of damage is US \$ 1.3 million. (This seems very high for only the Industrial Area.
- Repair damage to the Municipal abattoir.)

#### **2.2.3.4.3 Industrial Area up-grades**

- Upgrade and repair the existing road network. Based on the 35 Km of length claimed by the Municipality(which seems very high) this cost is roughly calculated to be US \$ 10.5 million.

#### **2.2.3.4.4 Relocate Facilities and Enterprises**

- No definitive information at this time.

#### **2.2.3.4.5 New Industrial Areas**

No work at this time

### **2.2.3 JENIN**

#### **Repair and Replace Enterprise Plant & Equipment**

- Repair three Automotive Service Shops that have been damaged.

#### **2.2.3.4.2 Industrial Area Repairs & Re-Construction**

- Repair damage to the water distribution system in the Existing Industrial Area. This would be in conjunction with the whole water distribution system repairs.
- Repair the Electrical distribution system in the Existing Industrial area. This should be done together with the whole electrical distribution System repairs.
- Repair Road damage to the Industrial Area.

#### **2.2.3.4.3 Industrial Area up-grades**

- Upgrade the Existing sanitary mains from the Industrial Area to the Treatment Plant in order to accommodate all future expansion.
- Rehabilitate the existing roads in the Industrial Area.

- Install new sewer lines and manholes required for the Industrial Area expansion.
- Construct a new Pumping Station to accommodate this and future expansions.
- Install new sanitary lines as required for this phase.
- Install new street lighting and Power distribution for this phase.
- Complete the new road layout for the proposed Industrial Area expansion.

#### **2.2.3.4.4 Relocate Facilities and Enterprises**

- Relocate 128 Automotive service and repair shops in the expanded Industrial Area.

#### **2.2.3.4.5 New Industrial Areas**

- No work at this time

### **2.2.4 TULKAREM**

#### **2.2.4.1 Repair and Replace Enterprise Plant & Equipment**

- The existing plants and equipment will need to be surveyed once occupation has ended.

#### **2.2.4.2 Industrial Area Repairs & Re-Construction**

- There is no recommendation.

#### **2.2.4.3 Industrial Area Up-grades**

- There is no recommendation

#### **2.2.4.4 Relocate Existing Facilities and Enterprises**

- The existing facilities and enterprises should be located to a new industrial area if found feasible once occupation has ended. Old feasibility studies should be reviewed at that time.

#### **2.2.4.5 New Industrial Areas**

- The existing plans will need to be reviewed once occupation has ended.

### **2.2.5 QALQILIA**

#### **2.2.5.1 Repair and Replace Enterprise Plant & Equipment**

- The existing plants and equipment will need to be surveyed once occupation has ended.

#### **2.2.5.2 Industrial Area Repairs & Re-Construction**

- There is no recommendation.

#### **2.2.5.3 Industrial Area Up-grades**

- There is no recommendation.

#### **2.2.5.4 Relocate Facilities and Enterprises**

- The existing facilities and enterprises should be located to a new industrial area if found feasible once occupation has ended. Old feasibility studies should be reviewed at that time.

#### **2.2.5.5 New Industrial Areas**

- The existing plants and equipment will need to be surveyed once occupation has ended.

## UpGrade Matrix

	Hebron	Ramallah	Al Bireh	Jericho *	Jenin	Tulkarm *	Nablus	Totals
<b>Sewage</b>								
<b>Liquid</b>	2,151,440	857,675	244,200	366,000	1,703,800	99,000		<b>5,422,115</b>
<b>Solid</b>	590,000	-----	-----	-----				<b>590,000</b>
<b>Water</b>	710,000	183,000	126,100	171,600	139,500	29,250		<b>1,359,450</b>
<b>Electric</b>	844,260	392,000	1,605,000	-----	400,000	194,500		<b>3,435,760</b>
<b>Roads</b>	5,992,728	4,284,000	2,024,900	3,198,946	1,445,000	1,615,000		<b>18,560,574</b>
<b>Drainage</b>	748,440		440,000					<b>1,188,440</b>
<b>Lighting</b>	206,333	757,656	80,470					<b>1,044,459</b>
<b>Totals</b>	<b>11,243,201</b>	<b>6,474,331</b>	<b>4,520,670</b>	<b>3,736,546</b>	<b>3,688,300</b>	<b>1,937,750</b>	<b>0</b>	<b>31,600,798</b>

\* Marked Sites (Jericho and Tulkarm) denote work for  
Proposed (not existing) Industrial areas

### Recommended Repairs to Enterprise Plant & Equipment

City	Description	Qty	Unit	Unit Cost	Total Cost	Remarks
Hebron	Plant & Inventory for Block plant					
	Site Damage (Casting Yard)	1,800	SM	15	27,000	
	Destroyed Equipment	18,500	Machine	4	74,000	
	Destroyed Inventory	100,000	Ea	1	60,000	
Ramallah	Repair Plastic Factory					
	Building Damage				30,000	
	Equipment Damage				30,000	
	Inventory Theft				40,000	
Ramallah	Repair Chocolate Factory					
	Building Damage				20,000	
	Inventory Loss, No Refrigeration				80,000	
Jenin	Repair Three Damaged Automotive service Shops				60,000	Rough Est. Needs to be Confirmed
Bethlehem	Repair two totally Destroyed Stone Cutting Plants				1,500,000	Estimate unconfirmed by visit
	<b>Total for Enterprise Repair</b>				<b>1,921,000</b>	



### Recommended Repairs to Ind. Area Infrastructure

City	Description	Qty	Unit	Unit Cost	Total Cost	Remarks
Hebron	Repair Road Connection	40	LM	2,250	90,000	
Jenin	Repair Damage to Water System	1	LS	207,000	207,000	Reported but not visited
	Repair Damage to I/A Roads	1	LS	50,000	50,000	Reported but not visited
Jenin	Repairs to Electrical Distribution System	1	LS	200,000	200,000	All estimates unconfirmed numbers provided by Jenin Municipality.
	Repair Water Distribution System	1	LS	10,000	10,000	
	Repair Roads in I/a	1	LS	50,000	50,000	
Nablus	Water supply System	1	LS	1,300,000	1,300,000	Estimate by Mun. Engr. - Unconfirmed
	Electrical Distribution Network	1	LS	1,700,000	1,700,000	Estimate by Mun. Engr. - Unconfirmed
	Municipal Abattoir	1	LS	90,000	90,000	Estimate by Mun. Engr. - Unconfirmed
<b>Total This Section</b>					<b>3,697,000</b>	

### Recommended Upgrades to Ind. Area Infrastructure

City	Description	Qty	Unit	Unit Cost	Total Cost	Lead Time	Implementation Time	Impact	Remarks
Hebron	Build Spine road in Existing IE	4,500	LM	770	3,465,000	120	270	Open large proportion of Ind. Area for use.	Start as soon as funded
Hebron	Dig & Pipe Settlement Basin	5,000	SM	117	585,000	210	120	Reduce water consumption and environmental damage.	Start as soon as funded
Hebron	Establish Utilization Sludge Utilization Enterprise	1	LS	280,000	280,000	180	180	Avoid Environmental Damage	Private Sector Enterprises, Study first, determine best use of sludge
Hebron	Upgrade of Al Maslakh Substation	1	LS	557,760	557,760	210	120		This item required to provide continuity of power in the industrial area.
Hebron	Upgrade O/H Electrical Distribution Lines	1,500	LM	45	67,500	60	120		This item is required to provide power to new locations in the industrial area.
Hebron	Upgrade U/G Electrical Distribution Lines	3,000	LM	73	219,000	60	120		
Hebron	New Secondary Roads	3,800	LM	390	1,481,088	120	240		
	Upgrade Existing Roads	3,500	LM	299	1,046,640	150	240		
	Solid Waste Equipment & Service	1	Var	710,000	710,000	90	30		
	Water Upgrade 2 wells plus piping	1	LS	590,000	590,000	90	75		
	Liquid Waste Collection	3,200	LM	256	818,000	120	150		
	Street Lighting	167	Lts	1,238	206,333	180	90		
	New Rd Sewers	7,000	LM	214	1,496,880	120	300		
	Total Hebron				11,523,201				
Ramallah	Upgrade RoadS - Ramallah	8,400	LM	510	4,284,000	150	540		Start 90 days after A. 2
Ramallah	Upgrade Sewer Lines - Ramallah	5,915	LM	145	857,675	150	240		Start as soon as funded
Ramallah	Install Street Lighting System - Ramallah	612	EA	1,238	757,656	90	120		Start as soon as funded
Ramallah	Provide new 10MVA Transformer - Ramallah	1	LS	179,200	179,200	150	90		
Ramallah	Upgrade SubStation Transformer - Ramallah	1	LS	212,800	212,800	150	90		
Ramallah	Upgrade Water System	1	Various	183,000	183,000	120	75		
	Total Rammallah				6,474,331				
Ramallah	Design & Install Storm drainage - Al Bireh	1,600	LM	275	440,000	120	140		
Ramallah	Extend sewer system through new area - Al Bireh	1,100	LM	222	244,200	120	120		
Ramallah	Upgrade Roads - Al Bireh	3,260	LM	379	1,235,540	150	240		
Ramallah	Provide 2 New Substations - Al Bireh	2	EA	575,000	1,150,000	150	180		
Ramallah	Upgrade Feeder Lines - Al Bireh	7,000	LM	65	455,000	30	120		
Al Bireh	Street lighting	65	Lt	1,238	80,470	180	60		
	Upgrade Existing Rds	2,640	Lm	299	789,360	150	240		
	Upgrade Water Distribution				126,100	90	90		
	Total Al Bireh				4,520,670				
<b>Total Infrastructure Upgrades (less Set Up Sludge Enterprise)</b>					<b>22,238,202</b>				

(That Item NOT Included in Cost Matrix Sheet)

### Infrastructure UpGrades to be Considered

City	Description	Qty	Unit	Unit Cost	Total Cost	Lead Time	Implementation Time	Remarks
Jericho	Extend Water Service to Industrial Area				171,600			
	Extend Sewer Lines to Industrial Area				366,000			
	<b>Sub Total - Jericho</b>				<b>537,600</b>			
Gaza	Construct new Transmission Line	1	LS		26,000,000	150	120	
Jenin	Upgrade Sewer System	1	Various	1,703,800	1,703,800			
	Upgrade Water Distribution	1	Various	139,500	139,500			
	Rehabilitate & Upgrade Electrical distribution	1	LS	400,000	400,000			Est by Minic. Engr. Definitely need review
	Road Network Upgrade	1	LS	1,445,000	1,445,000			and quantification before action
	<b>Subtotal - Jenin</b>				<b>3,688,300</b>			
Nablus	1. Repair And Upgrade I/A Road Network				10,465,000			Rough Approximation must be confirmed. Mun. Engr's report of 35 Km seems very high.

### Recommended Repairs to Ind. Area Infrastructure

City	Description	Qty	Unit	Unit Cost	Total Cost	Remarks
Hebron	Repair Road Connection	40	LM	2,250	90,000	
Jenin	Repair Damage to Water System	1	LS	207,000	207,000	Reported but not visited
	Repair Damage to I/A Roads	1	LS	50,000	50,000	Reported but not visited
Jenin	Repairs to Electrical Distribution System	1	LS	200,000	200,000	All estimates unconfirmed numbers provided by Jenin Municipality.
	Repair Water Distribution System	1	LS	10,000	10,000	
	Repair Roads in I/a	1	LS	50,000	50,000	
Nablus	Water supply System	1	LS	1,300,000	1,300,000	Estimate by Mun. Engr. - Unconfirmed
	Electrical Distribution Network	1	LS	1,700,000	1,700,000	Estimate by Mun. Engr. - Unconfirmed
	Municipal Abattoir	1	LS	90,000	90,000	Estimate by Mun. Engr. - Unconfirmed
<b>Total This Section</b>					<b>3,697,000</b>	

### Recommended Relocation Facilities

City	Description	Qty	Unit	Unit Cost	Total Cost	Remarks
Hebron	Relocate Enterprises to IE	100	Bays	9,344	934,400	
Ramallah	Relocate Automotive Enterprises	60	Bays	9,344	560,640	
Al Bireh	Relocate Various Enterprises	70	Bays	9,344	654,080	
Al Bireh	Relocate Construction Support Ent.	65	Bays	9,344	607,360	
Jenin	Relocate 128 Automotive Enterprises	128	Bays	8,100	1,036,800	Calc per Larger (100m2) Calculation sheet.
Tulkarm	Relocate Unspecified number of WorkShops				5,850,000	Lump Sum Data Provided by Tulkarm Municipality on 2 July.
Total for Recommended Facilities					9,643,280	

### **3.0 PALESTINIAN AUTHORITY REGIONAL CITY REPORTS**

#### **3.1 CITIES SURVEYED**

##### **3.1.1 HEBRON REPORT**

###### **3.1.1.1 Introduction**

The PRIZIM Damage Assessment Team visited Hebron on 13<sup>th</sup> and 15<sup>th</sup> June 2002 to assess the effects of the Israeli incursions on the industrial sector. Unlike many other affected areas physical damage was not widespread but the carry-on economic impact has been devastating.

In light of the relatively low level of damage the team's efforts were concentrated on assessing the state of the infrastructure in the area and its impact on the industrial sector. Meetings were held with His Excellency the Mayor, the vice Mayor and members of their technical staff. The team also met with the Head of the Chamber of Commerce and visited a representative sampling of the industrial sites affected.

At present the infrastructure is coping with the severely reduced level of economic activity possible due to the current blockade but several significant deficiencies were noted which will limit future activity and expansion of production at existing facilities, let alone being able to accommodate establishment of new enterprises when the situation is normalized.

###### **3.1.1.2 Damages**

The only industrial site identified with significant damage was the block factory near the blocked intersection of industrial area trunk road and highway 35. The value of the damage caused is estimated to be US\$ 160,000.

The team was informed that there had been extensive damage to the road network by IDF military vehicles (tracked). Significant damage to the road surfaces was not noted. Most of the main roads throughout the city were in need of rehabilitation but the cause appeared to be cracking of the asphalt surfaces due to normal age related deterioration and subbase or subgrade failures. The damage noted was consistent with heavy truck traffic and/ or the effect of overloaded vehicles. It did not seem likely to be caused by tracked vehicles that produce a lower ground pressure loading.

There was however a fair amount of scarring damage to median and curb blocks and some places where blocks were displaced by tracked vehicles turning. Occasional light pole damage was noted and the traffic signals at several intersections were not functioning, reportedly due to lines being cut in the incursions.

Both overhead and underground telephone lines were cut during the incursion. One 400 pair underground telephone cable, one 12 core fiber optic cable were cut at the junction of the main road through the industrial area and Highway 35. A telephone cabinet in the H2 Industrial Zone was also damaged. The 400 pair telephone cable and overhead telephone cables were repaired in a makeshift manner to restore telephone service.

###### **3.1.1.3 Existing Infrastructure**

###### **3.1.1.3.1 General Layout of Industrial Areas**

The current division of the designated industrial areas into H1 and H2 is inhibiting at best as without Palestinian control over the entire area the status of businesses in H2 is uncertain reducing their ability to be perceived as reliable suppliers.

A very significant amount of the most prominent industry in Hebron, the Stone and tile factories which contribute some 40 % of the industrial product to the economy of the West Bank are generally grouped in the H1 area near the main arterial in H2 with good access to the main trunk road.

Those portions of the H1 industrial areas to the East of the stone works concentration are under utilized due to poor access.

Approximately 15 % of the sizeable industrial enterprises in Hebron (30 of 200) are presently located in Commercial/Residential sections of the city. A desire was expressed by the Municipality to designate a new and separate light industrial area to concentrate these industries. The team noted that several enterprises would be candidates for this consolidation and the owners expressed real enthusiasm for the concept.

### 3.1.1.3.2 Road Network

The general road network for Hebron seems basically adequate but it is in serious need of upgrading and rehabilitation. This network cannot, however function until the political/security situation is resolved and the numerous blockages of the system are removed by the IDF.

In the industrial areas there is a real need for improved roads to connect with the existing main road. While the main road provides good access to and from the city and to and from suppliers and markets (once access is restored to highway 35), virtually all interior roads are poorly graded dirt tracks which restrict effective access to individual enterprises.

The Municipality desires to construct a major East – west Spine road generally along the Wadi just north of Highway 35. Approvals for this road have already been received from both the PA and Israel. Just east of the industrial zone the Municipality is constructing a new central wholesale vegetable market to replace the one closed by the IDF in 1994. At present the only access to this site is by a very poor dirt track. Construction of this road would materially improve access to large parts of the industrial zone and also provide needed access to the new market.

### 3.1.1.3.3 Solid & Liquid Waste Disposal

Time constraints precluded an in depth investigation of the sewer system but it is apparent that significant upgrading of the facilities is an urgent priority. At present all sewage, residential and industrial flows through a common system without treatment. Discharge is made close to inhabited areas and numerous ponds or stream beds filled with raw sewage were noted. At the site of the new vegetable market a large canal filled with raw sewage was being filled over with rubble in the middle of the site. This appears to be a typical case. Several industries (such as tanning) produce potentially hazardous waste which should be pre-treated.

Solid waste is even a bigger problem. At present there is no incinerator or land fill facilities in operation although a landfill has been designated 17 Km from the city. Presently almost everything is privately dumped wherever convenient and periodically burned, usually in close proximity to residential areas. In addition the stone products industry produces over 1,000m<sup>3</sup> of sludge per day, which is dumped into nearby wadis.

### 3.1.1.3.4 Water Supply

Current supply for all of Hebron is provided by wells, the bulk of which are controlled by Israel. The supply is inadequate at best. Only 3,000\_ m<sup>3</sup> in summer and 10,000 m<sup>3</sup> in winter are supplied against a currently estimated requirement of 25,000m<sup>3</sup>. Current industrial demand is receiving less than 50% of the current needs. The entire distribution system is obsolete and needs major upgrading and rehabilitation. Losses to the system are significant, particularly due to poor connection to both residential and industrial customers and lack of a maintenance plan for the system.

### 3.1.1.3.5 Electrical Distribution

A reliable electrical distribution system is required for the supply of the industrial area where loss of power for even a short duration can mean loss of production and result in significant monetary damage and loss of sales to competition. At present the existing Al Maslakh Substation which supplies the industrial area is supplied by a single 33-kV feeder from Israel Electric Company (IEC). Loss of this one 33-kV supply will result in loss of all power to the H2 Industrial Zone. The Deloitte & Touche (M.E.) *“Hebron Electric Power Company, HEPCO, Business Plan, Final Report,”* August 2000<sup>1</sup> outlined a 5 year strategy and a business plan. The implementation of work at Al Maslakh Substation would provide the additional reliability and capacity required for the H2 Industrial Zone. Implementation of the entire plan could transform the system for the entire city but is considered outside the scope of this report. A copy is attached for reference.

Immediate needs for the Industrial area center around the Al Maslakh Substation that supplies the industrial area and the distribution lines. Both the 7.5-MVA and the 10-MVA, 33-kV to 11/6.6 kV transformers in the substation are oil type air cooled that were manufactured by Elco Ltd. Transformers. It is recommended that the 7.5-MVA transformer built in 1974 be replaced at this time with a new 10 MVA, 11/6.6 kV transformer. The Al Maslakh Substation has a 33-kV radial feed line supplying power to the substation. The second 33-kV supply that will complete a loop system has been constructed but has not been connected to the Al Maslakh Substation because of its present configuration. The number of feeders from the substation will be increased from four to eight. The existing switchgear is a mismatch of 1988 Sprecher minimum oil type switchgear and 1999 ABB SF6 switchgear. The building will need to be extended to house the new switchgear and a new fence will be required around the substation to provide safety. The present fence is deteriorated and has been broken through in several places.

It is also planned to upgrade the 6.6 kV distribution system to 11 kV. The one existing 10 MVA substation transformer and the station service transformer can be reconnected for 11 kV. Distribution transformers in the industrial area that step the voltage down to 400 Volts have been purchased as dual voltage transformers, i.e., 11/6.6 kV and the distribution lines are insulated for 11 kV. Upgrading the system will require that the taps be changed on the existing distribution transformers once the voltage is increased to 11 kV. Note that the 33 kV line into the Al Maslakh Substation is a radial feed; the second line has been brought to the substation but it has not been connected into the substation. The surrounding substation fence has rusted through and has several holes where persons can enter the substation. The entire substation including the fence should be upgraded at this time to ensure that adequate power is available to meet current and future requirements and to ensure safety requirements are met.

There is a project planned to extend electricity to the rock quarry at Al Fajar which is under the jurisdiction of by the Jerusalem District Electricity Company, Ltd. (JDECO) and not Hebron Electric Power Company (HEPCO). Quarry operations are presently powered by a number of engine-generator sets that provide a noisy and noxious work environment.<sup>2</sup>

#### **3.1.1.3.6 Telephone System**

The telephone system is operated and maintained by Palestine Telecommunications, PLC. The existing system is functional at present but problems exist where overhead and underground cables have been cut by the IDF. This has happened repeatedly and is an ongoing problem. Cables have been hastily repaired in many areas due to fear of IDF forces overlooking the H2 Industrial Zone.

The outside plant cables will have to be upgraded at some future time to permit reliable voice and data transmission that will provide efficient, competitive industrial operations. The switches used are a Nortel that is data capable and an Alcatel that can be upgraded to data capable. The switches are more than adequate at this point.

#### **3.1.1.4 Conclusions and Recommendations**

While there does not appear to be a great deal of physical damage to infrastructure or individual industrial enterprises caused by the IDF incursions, the economic impact of the isolation of Hebron (as well as other areas) caused by the IDF road closures has been catastrophic. All of the enterprises we visited were operating at severely reduced levels or were completely idle due to this impact. Without resolution of the political/security situation it is feared that any improvements in infrastructure and specific industries cannot realize significant improvements in employment levels or economic activity. The Israeli imposed road closures that makes it impossible to move materials and products in a timely manner is the limiting factor for all industries.

That being said the team has identified several areas where improvement in infrastructure can have an immediate positive impact when the general situation improves.

##### **3.1.1.4.1 Repair and Replace Enterprise Plant & Equipment**



- Fund the replacement of Equipment and inventory at Block Plant by Highway 35 intersection.

#### **3.1.1.4.2 Industrial Area Repairs & Re-Construction**

- There is nothing significant to recommend at this time.
- When the situation stabilizes funds should be used to clear and repair the blocked road connection to Highway 35 and to repair severed utility lines.

#### **3.1.1.4.3 Industrial Area Up-grades**

- Construct an East – West “Spine Road” in Industrial Area.
- Establish a central settlement pond for the wastewater from the various Stone Products plants located near the main road and install piping to centrally collect wastewater.
- Establish a subsidized enterprise to manage and operate the sludge collection operation and produce economically viable products from the sludge (Such as architectural stone).
- Upgrade the Al Maslakh Substation including new transformer and fencing.
- Upgrade overhead electrical distribution lines to the Industrial Area.
- Upgrade underground electrical distribution lines to the Industrial Area.
- Build new secondary roads in area opened up by the “Spine Road.”
- Upgrade existing roads in built up areas of the Industrial Area.
- Purchase bins and trucks to upgrade solid waste collection.
- Improve water supply by drilling two wells and upgrading distribution in the Industrial Area.
- Add additional sewers and replace old piping.
- Install street lighting along new “Spine Road.”
- Install storm sewers along new roads.

#### **3.1.1.4.4 Relocate Facilities and Enterprises**

- Consolidate industries into the industrial park. The recommended construction of the new spine road which is already approved and permitted will open access to considerable areas in the existing industrial park which are presently under utilized. It is suggested that this may well be sufficient for the contemplated relocations.
- Build Workshop Complexes to accommodate relocation of small (5 or less employees) presently interspersed throughout the city. These can facilitate concentration of certain types of businesses such as automotive repair and support, steel and aluminum fabricators, furniture makers etc.

#### **3.1.1.4.5 New Industrial Areas**

- Interest has been expressed in establishment of a new and separate light industrial park. It is believed that plans for any new industrial area be reassessed after the bulk of the existing area is open and utilized for desirable re-location of industry from present commercial and residential areas.

### **Hebron End Notes**

- <sup>1</sup> Deloitte & Touche (M.E.) “*Hebron Electric Power Company, HEPCO, Business Plan, Final Report,*” August 2000
2. There is a project planned to extend electricity to the rock quarry at Al Fajar which is under the jurisdiction of by the Jerusalem District Electricity Company, Ltd. (JDECO) and not Hebron Electric Power Company (HEPCO). Quarry operations are powered by a number of engine-generator sets that provide a noisy and noxious work environment. The 20 June 2000 estimated cost for this project is \$140,000.
- 3 Meeting with Jerusalem, District Electricity Company (JDECO) 0800 hours: on 24 June 2002, Eng. Mansour Nassar, JDECO General Paning Manager, Mr. Hisham Omari, JDECO Director Manager, Paul M. Strong, USAID/Louis Berger Group Electrical Engineer and Bassam at JDECO Offices, Salah-El-Din Street No. 15, Jerusalem 91190

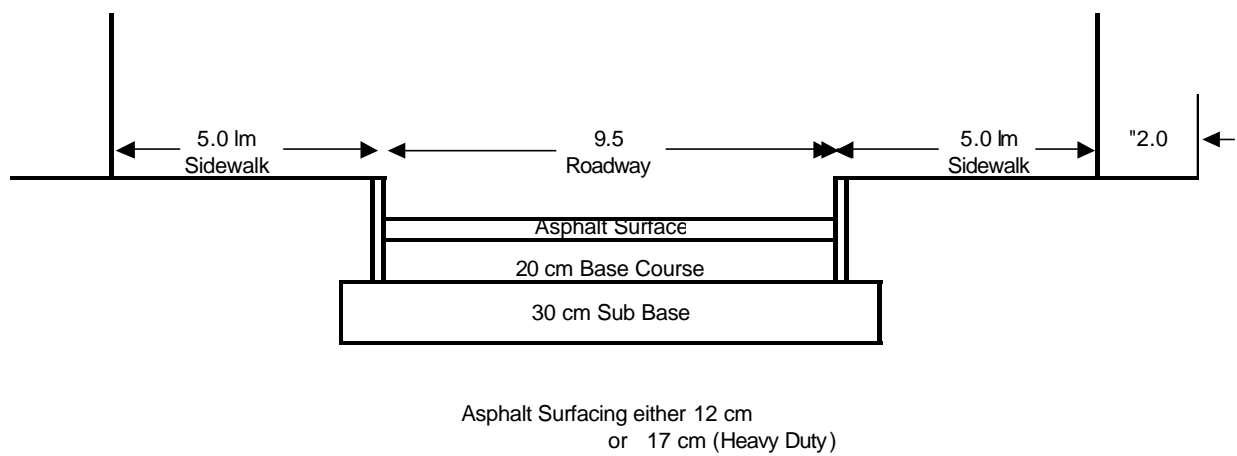
### 3.1.2.5 Maps of the Industrial Area Hebron



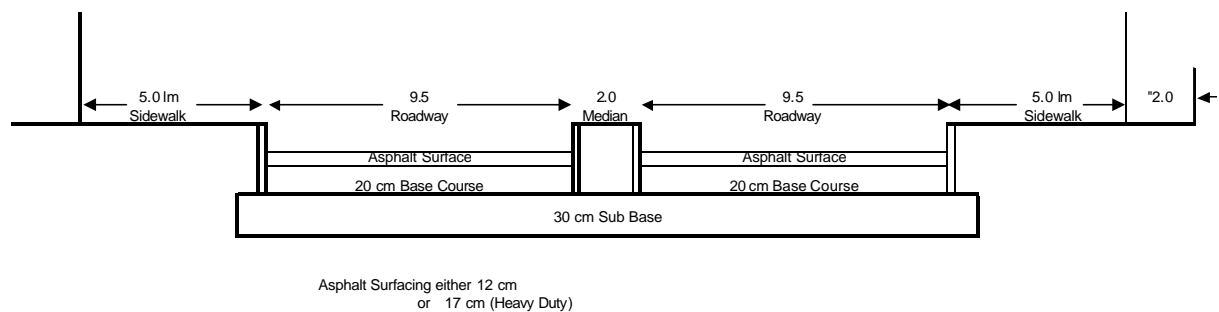
**3.1.2.6 Spreadsheet of Recommendations and Costs for Hebron****Cost and Time Frame for Recommended Items  
HEBRON**

Report Item	Cost in US \$	Estimated time To Complete (Days)	Remarks
<b>Industrial Area Repairs &amp; Re-Construction</b>			
A. No Work			
B. Clear & Repair Road Connection	59,200	45	After Blockade Lifted
<b>Industrial Area up-grades</b>			
A. Build Spine road in Existing IE	3,089,286	270	
B. Dig & Pipe Settlement Basin	520,000	120	
C. Establish Utilization Sludge Utilization Enterprise	150,000	180	
D. Upgrade of Al Maslakh Substation	933,000	120	
E. Upgrade O/H Electrical Distribution Lines	60,000	120	
F. Upgrade U/G Electrical Distribution Lines	180,000	120	
G. Build new Secondary Roads	1,481,088	240	
H. Upgrade existing side Roads	1,046,640	240	
I. Upgrade Solid waste Collection	710,000	30	
J. Drill 2 new wells & Upgrade Water Distribution.	590,000	75	
K. Add sewers and Upgrade some existing.	826,000	150	
L. Street Lighting for New Road.	206,333	90	
M. Storm Drainage for new roads.	1,496,880	300	
<b>New Industrial Areas</b>			
A. Light Industrial Park	0		Evaluate if Required after opening access to all of existing Area.
<b>Repair and Replace Enterprise Plant &amp; Equipment</b>			
A. Plant & Inventory for Block plant	150,000	30	Start as soon as funded
<b>Relocate Facilities and/or Enterprises</b>			
A. Relocate Enterprises to IE	806,500	180	After completion of Spine Road Assume 100 workshops
<b>Total this Report (Hebron)</b>	<b>12,304,927</b>		

### 3.1.1.7 Typical Roadway Sections



**Typical Roadway Section**



**Typical Roadway Section (Double)**

**3.1.1.10      Miscellaneous Data for Hebron**
**Road Costing Sheet - West Bank**
**Hebron**

Item	9.5 R/way	19.0 R/way
	Heavy	Heavy
<b>Grading</b>	<b>21</b>	<b>60</b>
<b>Sub Grade (30 cm)</b>	<b>33</b>	<b>66</b>
<b>Base Course (20 cm)</b>	<b>44</b>	<b>89</b>
<b>Asphalt (17 cm)</b>	<b>199</b>	<b>398</b>
<b>Asphalt (12 cm)</b>		
<b>Curbs</b>	<b>26</b>	<b>52</b>
<b>Sidewalks</b>	<b>67</b>	<b>105</b>
<b>Total Per Lm of Road</b>	<b>390</b>	<b>770</b>
<b>Access Road Length</b>	<b>9,000</b>	<b>4,500</b>
<b>Total Cost</b>	<b>3,509,712</b>	<b>3,464,712</b>

**COST ANALYSIS OF WORKSHOPS**

Assume a row of UNITS 4m wide x 8m deep and 4.5 m high

ITEM	QUANTITY	UNIT/GAZA \$/SM	COST/GAZA \$	UNIT/WB \$/SM	COST/WB \$
Slab on Grade 15 cm.	160	35	5,600	50	8,000
Columns 30x60cm per m <sup>3</sup>	15	170	2,550	215	3,225
Columns 30x30cm per m <sup>3</sup>	10	170	1,700		0
Beams 30x60cm per m <sup>3</sup>	19	170	3,230	215	4,085
Roof Slab 26 cm thick per m <sup>2</sup>	160	35	5,600	50	8,000
Roof Screed and Membrane	160	10	1,600	15	2,400
Conc. Bock 20.cm wide per m <sup>2</sup>	243	12	2,916	15	3,645
Plaster Interior per m <sup>2</sup>	470	3	1,410	6	2,820
Plaster Exterior per m <sup>2</sup>	165	5	825	10	1,650
Floor Tiles	160	12	1,920	15	2,400
Metal Store Front 3x3m ea.	5	500	2,500	600	3,000
Top Front Window 1x3m per m <sup>2</sup>	15	50	750	70	1,050
Total			30,601		40,275
Cost per Shop			6,120		8,055
Cost per m <sup>2</sup> - Structure			191.26		251.72
Electical Cost Add			16.00		18.00
Plumbing - Add			8.00		10.00
Site Prep - Add			12.00		12.00
					291.72

### **3.1 CITIES SURVEYED (CONTINUED)**

#### **3.1.2 RAMALLAH REPORT**

##### **3.1.2.1 Introduction**

The PRIZIM Damage Assessment Team visited the Ramallah Area on 19<sup>th</sup> 20<sup>th</sup> and 22<sup>nd</sup> June 2002 to assess the effects of the Israeli incursions on the industrial sector. As is widely known this city suffered extensive damage during the Israeli incursions. As well as great damage to buildings and facilities which the IDF targeted due to the alleged presence of military targets, there seemed to be a great deal of specifically targeted damage to utility lines and facilities throughout the built up areas crippling services to the general community. There was also widespread damage to asphalt surfaces, curbs, medians and sidewalks of many roads.

Most of this damage occurred in administrative, residential and commercial areas. The industrial area was spared most damage. There was, however damage to two enterprises which are discussed below.

This report covers the Municipalities of Ramallah, Al Bireh and Beit Tunia, which, despite being separate entities constitute one economic entity. Each of these has it's own designated Industrial Zone although that of Beit Tunia exists at present in name only.

Meetings were held with the Municipal Engineer, the Head of the Chamber of Commerce and a representative sampling of the existing factories were visited in both Ramallah and Al Bireh.

##### **3.1.2.2 Damages**

The only industrial sites identified with significant damage in Ramallah were the Arastics Plastics Ltd plant for Plastic Drums which sustained an estimated US\$ 100,000 damage to plant, equipment and stolen raw materials (plastic powder taken for sandbags) and minor building damage and considerable inventory loss to the Sonokrat Candy and Ice Cream factory.(+/-US\$ 100,000).<sup>1</sup> This was "collateral damage" to the attack on the Security Headquarters located in the Industrial Area. There was no other apparent damage to the Industrial area or it's infrastructure.

In Al Bireh there was considerable damage at the central abattoir and associated animal pens. Due to security constraints the team was unable to visit or evaluate this damage at this site.

The Israeli Defence Forces (IDF) destroyed two of Jerusalem District Electricity Company, Ltd (JDECO) substations and feeders to Ramallah have been destroyed 5 times by the IDF bulldozing through roads.<sup>1</sup>

##### **3.1.2.3 Existing Infrastructure**

###### **3.1.2.3.1 General Layout of Industrial Areas**

###### **Ramallah**

This industrial area is well laid out and has recently been extended to provide for adjacent, Light Industry and mixed use areas. These areas are presently in use by most of the major enterprises in this city. Overall occupancy of the zoned area of 1,000 dunams is estimated to be 50 – 60 %

All land in the industrial areas is privately owned. It is also very expensive, making a problem for firms wanting to relocate here. The majority of the other firms in Ramallah tend to be small workshops employing 5 or less individuals. For the most part these are concentrated in the commercial areas of the city. Industrial workshops outside the zone have been declared illegal by the city but compelling them to move has been difficult.

It is unlikely these shops will be willing to relocate without strong financial incentives or legal coercion as they are mostly occupying rented facilities with rents established a long time ago, hence very inexpensive. It is understood that new laws soon to be enacted will allow increases in rents which may make this relocation



more attractive. In addition the renters leaving all properties are entitled to 70% of the “Key Fee” charged the new tenant which will alleviate relocation costs.

Generally the Industrial Area has reasonable road access to the main trunk roads (when there are not closures) and when the currently planned new construction by Israel is complete it should be more than adequate.

#### **Al Bireh**

This industrial area is well laid out and the original zone of 240 dunams has recently been extended to the northeast as far as the central abattoir to include an additional 120 dunams. Overall occupancy of the originally zoned area is roughly 80 % and the new area occupancy rate is about 35%.

All land in the industrial areas is privately owned and managed with the exception of one small block developed by the municipality with USAID assistance which contains multiple bays (roughly 25 m<sup>2</sup> each) for small establishments (100% occupied).

Generally the Industrial Area has good road access to the main trunk roads (when there are not closures). Both this area and the Industrial Area in Ramallah are on the Nablus Road.

#### **Beit Tunia**

An industrial area of 200 dunams has been designated but no development has yet taken place. Road access is available and the area is serviced by existing water mains. A plan of the intended roads has been prepared but not designed. No funding is available for this work.

### **3.1.2.3.2 Road Network (Internal)**

There is a well defined road network in the developed industrial areas. Most of these roads are in poor condition at present but well conceived plans for improving them have already been formulated in Ramallah and in Al Bireh basic resurfacing, widening and construction of curbs & sidewalks are needed. In Al Bireh there is also an urgent need to install a storm sewer drain across the old and through the new parts of the zoned area. Estimated cost is approximately US \$ 440,000.<sup>2</sup>

### **3.1.2.3.3 Solid & Liquid Waste Disposal**

At present the Ramallah area is served by a treatment plant located south of the Industrial Area. There are conceptual plans for a new plant to serve Ramallah and the surrounding communities. There is a contract that has been awarded to upgrade the existing Ramallah plant as it is realized that the new plant will not be built for many years. The existing plant, with its upgrade should be adequate for some years.

In Al Bireh treatment is adequate for present needs but the collection system has not yet been extended to the areas recently added to the Industrial Area. There is a plan to pipe the effluent from the treatment plant some 5 kilometers to where it can be used in agricultural areas. There is no definitive data concerning this plan at present.

Currently collection of solid waste is intermittent at best for both Ramallah and Al Bireh. Disposal for both areas is at a temporary site operated by Ramallah. The site previously used by Al Bireh has been cut off from Palestinian areas by closures and is now in use by Israeli Settlements only.

Tentative plans have been made to develop a regional landfill site 15 kilometers south of Ramallah to service Ramallah, Beit Tunia and Al Bireh. The lack of such a facility is becoming an increasingly serious health and safety issue which should be addressed as a high priority in the effort to recover / upgrade facilities after the overall situation improves.

### **3.1.2.3.4 Water Supply**

Water is currently supplied by the Jerusalem Water Undertaking (JWU), which services the whole area. The supply is felt to be adequate to meet the current allotment allowed by Israeli authorities of 70 liters per day per person but it is far below the real need (the allotment in Israeli areas is 250 liters/day). In Al Bireh alone demand is expected to near 3 million m<sup>3</sup>/year by 2005.

The distribution system (1977) needs upgrading from 4" to 6" and 8" lines. This need is especially urgent as there is a very great loss of the already minimal supplies due to large leakages. Some 20,000 lm of piping is needed to upgrade the system. Cost of the upgrade is estimated as US \$ 3.0 Million.

The main pumping station in the industrial area has a capacity of 24,000 m<sup>3</sup> per day. Current demand is 36,000 m<sup>3</sup>/day and is normally 40,000 m<sup>3</sup>/day. Approximately 24,000m<sup>3</sup> is obtained from local wells, 2,000 m<sup>3</sup> is purchased from the Municipality of Jerusalem leaving a shortfall of 8,000 m<sup>3</sup> per day at present. If closures are removed demand is expected to rise to 40,000 m<sup>3</sup> per day.

#### Fire Fighting

At present there are only 2 fire trucks servicing Al Bireh. There are no ladder trucks. Scarce domestic Water is presently being used for fire fighting.

### **3.1.2.3.5 Electrical Distribution**

Due to its integrated nature as a system the entire area around Ramallah was examined.

East Jerusalem, Bethlehem, Jericho and Ramallah and other districts in the West Bank are under the jurisdiction of the Jerusalem District Electricity Company, Ltd (JDECO). JDECO was created in 1928 by British mandate with an expiration of 1988. Originally, JDECO's sixty year concession had a twenty-five mile radius. New electrical generators were purchased in 1984 but were never installed. Existing diesel engine generators were later shut down. JDECO receives all of its electrical power from IEC substations that operate at 161-kV to 33-kV. JDECO meters power at 33-kV from these substations. Presently there is no differential in rates between industrial and residential customers. The following projects are those put forth by Engineer Mansour Nassar and Hisham Omari in a meeting held 23 June 2002 at the Palestinian Electric Company, Jereusalem.<sup>1 & 2</sup>

#### **Ramallah**

- In the Ramallah industrial area there are presently a 10 and a 15 MVA transformers. There is a requirement for additional spare capacity. A new 15 MVA transformer is proposed to replace the existing 10 MVA transformer.<sup>1</sup>
- A new 10 MVA transformer is required on Berzeit Street to connect to the new incoming 33 kV line.<sup>1</sup>

#### **Al Bireh**

- 11 kV and 33 kV distribution feeders supply Al Bireh industrial zone. There will be 2 new substations.<sup>1</sup>
- The future plan is to loop feed the substations and double the capacity by operating a closed ring system.<sup>1</sup>
- An 11 kV line needs to be relocated and the voltages needs to be upgraded to 33 kV. The distribution line inside this area needs t be replaced . It is 35 years old.<sup>1</sup>

#### **Betunia**

- Betunia industrial area is supplied by 33 kV distribution feeders. There are 3 each, 630 kVA transformers supplying the stone and marble, pharmaceutical, plastic and other industries.<sup>1</sup>

#### **Berzeit**

- The future industrial area planned for Berzed will be supplied by an 11 kV distribution. The line has been designed but not yet funded. The cost of this project is not know at this time.<sup>1</sup>
- The future plan is to loop feed the substations and double the capacity by operating a closed ring system. The cost of this project is not know at this time.<sup>1</sup>

#### **JDECO System**

- Presently there is a project to rehabilitate much of the system. JDECO has used \$8,000,000 for the first portion of a \$12,000,000 funded project through European Investment Bank (EIV). The second portion is for a Supervisor Control and Data Acquisition (SCADA) system. Since the loan for the \$4,000,000 is tied to Italy and there is only one bidder, it is not planned to use the loan. The SCADA system will be combined with other systems needed and a second loan for the revised project as outlined below sought.<sup>2 & 4</sup> It is now planned to combine the specification design for the SCADA with a Network Information System (NIS) and a Customer Information System (CIS). This specification will combine software and hardware for all three systems and use a common database for all three systems. A loan for approximately \$3,000,000 will be sought for the combined SCADA/NIS/CIS.<sup>2 & 3</sup>

#### **3.1.2.3.6 Telephone System**

The existing system is functional at present but problems exist where overhead and underground cables have been cut by the IDF. This happens repeatedly and is an ongoing problem. All outside plant cables should be moved underground as soon as possible. The entire system in the Ramallah area are is data capable.

### **3.1.2.4 Conclusions and Recommendations**

The Industrial Area of Ramallah is well established and possesses an infrastructure which should allow it to grow substantially. That in El Bireh is well serviced in the older areas but needs extension of services to the newly added portion. The designated industrial for Beit Tunia has not been developed.

It is suggested that a coordinating committee or authority be established to jointly develop and manage these 3 areas to avoid wasteful duplication and concentrate relocation of various industries to logical clusters. For example there seems at present to be a larger concentration of automotive related enterprises and construction related firms in Al Bireh and a heavier concentration of manufacturing plants in Ramallah. These existing concentrations could be reinforced in the relocation process.

Such an authority could also consolidate expansion of sewage treatment and solid waste disposal on a regional basis.

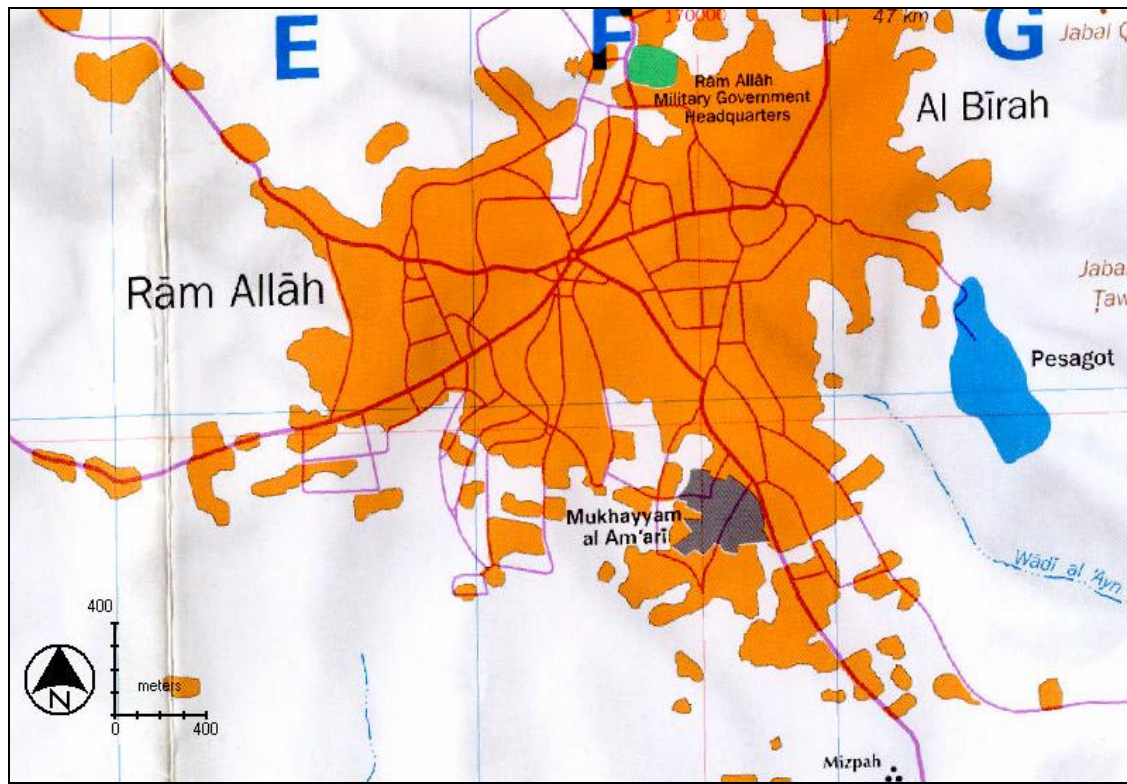
In Al Bireh a small block of workshops is already owned and managed by the municipality and would expansion of that program would provide space for small workshops which proliferate in the automotive and construction trades.

- 3.1.2.4.1 Repair and Replace Enterprise Plant & Equipment**
- Fund repairs at the two enterprises damaged in Ramallah.
  - Fund repairs at the Al Bireh abattoir.
- 3.1.2.4.2 Industrial Area Repairs & Re-Construction**
- There is nothing significant to recommend at this time.
- 3.1.2.4.3 Industrial Area Up-grades**
- Ramallah**
- Upgrade roads in accordance with the detailed plan already developed by the Municipality.
  - Upgrade sewer lines in accordance with the detailed plan already developed by the Municipality.
  - The planned installation of street lighting is recommended. It is recommended that least underground wiring for the lighting system be installed in conjunction with the road upgrades.
  - Coordination should be done with JWU to see if upgrading the water distribution system is feasible at this time in conjunction with the other road work.
  - Provide new 10 MVA Transformer
  - Upgrade Existing Substation Transformer.
  - Upgrade Water distribution system.
- Al Bireh**
- Design and install storm drainage system across industrial area.
  - Extend liquid waste system to new portion of Industrial Area.
  - Upgrade main roads in Industrial Area including road to abattoir.
  - Provide two new Electrical Substations.
  - Upgrade Electrical feeder lines.
  - Install street lighting on main road in new portion of Industrial Area
  - Upgrade and resurface existing roads as needed.
  - Upgrade water distribution system.
- 3.1.2.4.4 Relocate Facilities and Enterprises**
- Ramallah**
- Construct facilities to relocate 40 small automotive repair and service businesses to the Industrial zone.
- Al Bireh**
- Construct Facilities to relocate the 70 or so small enterprises currently identified by the Municipal Engineer as operating in illegal areas and assist in re-location costs.
  - Construct facilities to relocate 65 small construction material and support businesses to the Industrial zone.
- 3.1.2.4.5 New Industrial Areas**
- The industrial area in Beit Tunia has been zoned but not developed. Evaluate if development of this is necessary as part of a total regional strategy.

Ramallah End Notes

- <sup>1</sup> Estimates were provided to the team by enterprise owners.
- <sup>2</sup> The estimate is by the Municipal Engineer
- <sup>3</sup> Meeting at Ramallah Branch Office of Jerusalem, District Electricity Company (JDECO), 1100 hours on 23 June 2002.
- <sup>4</sup> Meeting with Jerusalem, District Electricity Company (JDECO) 0800 hours: on 24 June 2002, Eng. Mansour Nassar, JDECO General Paning Manager, Mr. Hisham Omari, JDECO Director Manager, Paul M. Strong, USAID/Louis Berger Group Electrical Engineer and Bassam at JDECO Offices, Salah-El-Din Street No. 15, Jerusalem 91190
- <sup>5</sup> Jerusalem, District Electricity Company (JDECO) Specification Section VI Contract No.: ESIMP – 12/2000, NIS/GIS System.
- <sup>6</sup> Electric Sector Investment and Management Project (ESIMP), Progress Report January – March 2002, Jerusalem, District Electricity Company (JDECO), by Norconsult.
- <sup>7.</sup> Specific Information for the Ramallah and Al Bireh Areas were provided by Adela Atteerah, Municipal Engineer and Mr. Munif Tarish, Municipal Engineer of Al Bireh

### 3.1.2.5 Maps of the Industrial Area Ramallah Area



**Ramallah Site**





**Al Bireh**





### 3.1.2.6 Spreadsheet of Recommendations and Costs for Ramallah and Al Bireh

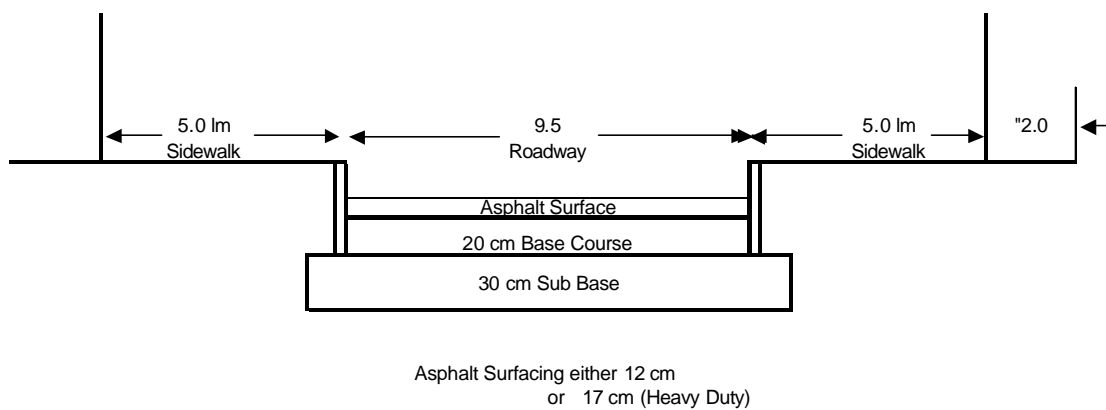
#### Cost and Time Frame for Recommended Items Ramallah Area

Report Item	Cost in US \$	Estimated time To Complete (Days)	Remarks
<b>Repair and Replace Enterprise Plant &amp; Equipment</b>			
Repair Plastic Factory	100,000	30	Start as soon as funded
Repair Chocolate Factory	20,000	0	Already done, reimbursement only
Repair the Al Bireh Abattoir	( N / A )	???	Could not visit No Estimate
<b>Industrial Area Infrastructure Repairs &amp; Re-Construction</b>			
1. No Work			
<b>Industrial Area Infrastructure up-grades</b>			
Upgrade Roads - Ramallah	4,284,000	300	Start 90 days after A. 2
Upgrade Sewer Lines - Ramallah	857,675	240	Start as soon as funded
Install Street Lighting System Ramallah	757,656	120	Start as soon as funded
Water Distribution System Upgrade - Ramallah	183,000	75	
Provide new 10MVA Transformer - Ramallah	179,200	90	
Upgrade SubStation Transformer - Ramallah	212,800	90	
Design & Install Storm drainage - Al Bireh	440,000	140	
Extend sewer system through new area - Al Bireh	244,200	120	
Upgrade Roads - Al Bireh	1,235,540	180	
Provide 2 new SubStations	1,150,000	90	
UpGrade Electrical feeder Lines	455,000	120	
Street Lighting	80,470	60	
Upgrade Old Interior Roads	789,360	240	
Upgrade Water Distribution	126,100	90	
<b>Relocate Facilities and/or Enterprises</b>			
A.1. Relocate 40 Automotive Enterprises to IE - Ramallah	537,060	180	Assume 1/2 need double bays
B.2. Relocate 70 Enterprises - Al Bireh	626,570	240	
B.2. Relocate 65 Construction Support Ent. - Al Bireh	581,815	240	
<b>New Industrial Estates</b>			
1. No Work	0		
<b>Total this Report - Ramallah Area</b>	<b>12,860,446</b>		

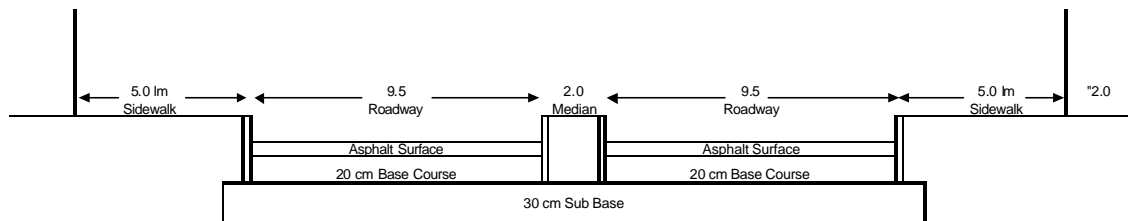
**3.1.2.7 Types of Businesses in the Industrial Areas**

<b>Item</b>	<b>Ramallah Businesses</b>	<b>Number of Industries</b>
1	Export-Import & Marketing	4
2	Aluminum works	2
3	Grocery	2
4	Household utensils	1
5	Sales new furniture	1
5	Electric equipment	2
6	Cassettes	1
4	Household utensils	1
7	Food whole selling	5
8	Selling and renting cars	2
9	Computer maintenance	1
10	General trade & transportation	9
11	Wheels mending	1
12	Furniture manufacturing	3
13	Manufacturing of electrical equipment	1
14	feed manufacturing	2
15	Carton manufacturing	1
16	Food manufacturing	10
17	Bottling & Packaging	1
18	Engineering office contracting	5
19	Gas selling & distribution	1
20	General services	2
21	Publishing house	1
22	Advertisement & publicity	2
23	Paints	6
24	Ready beton	1
25	Medicine manufacturing company	1
26	Plastic manufacturing	12
27	Sponge manufacturing	3
28	Plastic pipe manufacturing	3
29	Tissues manufacturing	2
30	Bakery	1
31	Electro-mechanical	2
32	Medicine store	1
33	Gold works	1
34	Electrical equipment	2
35	Printing shop	1
36	Brick workshop	1
37	Stone & Marble	5
38	Carpenter shop	1
39	Construction materials	3
40	Cosmetics	1
41	Cleaning materials	4
42	Mechanics	1
43	Agents	2
44	Furniture	1
45	Import & Sale of used objects (car)	8
46	Lathe	3
<b>Total</b>		<b>126</b>

<b>Item</b>	<b>Al Bireh Businesses</b>	<b>Number of Industries</b>
1	Furniture	1
2	Aluminum work	6
3	Grocery	1
4	Sale of cement & steel	1
5	food whole selling	1
6	General trade & transportation	2
7	Solar & air conditioning	2
8	Feed manufacturing	2
9	Carton manufacturing	1
10	Food manufacturing	4
11	Textile & garments	1
12	Advertisement & publicity	1
13	Paints	3
14	Investment Company	1
15	Ready beton co	1
16	Sale of used objects	1
17	Blacksmith	11
18	Gold workshop	1
19	Brick factory	3
20	Stone & marbles	7
21	Carpenter shop	11
22	Construction materials	4
23	Cleaning materials	2
24	Mechanics	8
25	Agent	1
26	Plumber	1
27	Electromechanical painting	1
28	Garage	3
29	Electronics	1
30	Water tanks factory	1
31	Flagstone factory	2
<b>Total</b>		<b>86</b>

**3.1.2.8 Single Road Cross Section for Ramallah and Al Bireh****Typical Roadway Section**

### 3.1.2.8 Double Road Cross Section for Ramallah and Al Bireh



Asphalt Surfacing either 12 cm  
or 17 cm (Heavy Duty)

**Typical Roadway Section (Double)**

**3.1.2.9 Breakdown of Road Costs for Ramallah and Al Bireh****Road Costing Sheet - Ramallah Area**

Item	9.5 R/way	Costs per LM		19.0 R/way Heavy
		9.5 R/way Heavy	19.0 R/way	
Grading	20	20	41	41
Sub Grade (30 cm)	31	31	62	62
Base Course (20 cm)	44	44	89	89
Asphalt (17 cm)		228		383
Asphalt (12 cm)	135		271	
Curbs	26	26	52	52
Sidewalks	75	75	105	105
Total Per Lm of Road	331	424	620	732
Al Bireh Lm	2,160		1,100	3,260
<b>Al Bireh Cost</b>	<b>553,696</b>		<b>681,650</b>	<b>\$379/ LM Ave</b>
Ramallah Lm	2,240		5,130	7,370
<b>Ramallah Cost</b>	<b>574,203</b>		<b>3,178,967</b>	<b>\$510/LM Ave</b>
<b>( All costs in US \$ )</b>			<b>1,235,346</b>	

**3.1.2.10 Miscellaneous Data for Ramallah and Al Bireh****COST ANALYSIS OF WORKSHOPS**

Assume a row of UNITS 4m wide x 8m deep and 4.5 m high

ITEM	QUANTITY	UNIT/GAZA \$/SM	COST/GAZA \$	UNIT/WB \$/SM	COST/WB \$
Slab on Grade 15 cm.	160	35	5,600	50	8,000
Columns 30x60cm per m <sup>3</sup>	15	170	2,550	215	3,225
Columns 30x30cm per m <sup>3</sup>	10	170	1,700		0
Beams 30x60cm per m <sup>3</sup>	19	170	3,230	215	4,085
Roof Slab 26 cm thick per m <sup>2</sup>	160	35	5,600	50	8,000
Roof Screed and Membrane	160	10	1,600	15	2,400
Conc. Bock 20.cm wide per m <sup>2</sup>	243	12	2,916	15	3,645
Plaster Interior per m <sup>2</sup>	470	3	1,410	6	2,820
Plaster Exterior per m <sup>2</sup>	165	5	825	10	1,650
Floor Tiles	160	12	1,920	15	2,400
Metal Store Front 3x3m ea.	5	500	2,500	600	3,000
Top Front Window 1x3m per m <sup>2</sup>	15	50	750	70	1,050
Total			30,601		40,275
Cost per Shop			6,120		8,055
Cost per m <sup>2</sup> - Structure			191.26		251.72

### **3.1 CITIES SURVEYED (CONTINUED)**

#### **3.1.3 JERICHO REPORT**

##### **3.1.3.1 Introduction**

The PRIZIM Damage Assessment Team visited Jericho on 17<sup>th</sup> and 18<sup>th</sup> June 2002 to assess the effects of the Israeli incursions on the industrial sector. While there is no physical damage in this largely tourist town; however, the economic and psychological impact of the current closures is devastating.

The team concentrated on assessing the state of the infrastructure in the area and its impact on the industrial sector. Meetings were held with the Municipal Engineer and members of his technical staff. The team also met with the Head of the Chamber of Commerce and visited a representative sampling of the industrial enterprises in the area.

Basic infrastructure seems adequate to meet the needs of the city with the exception of electric supply which has not increased to cope with the demands of the Casino and other tourist activities. There is no industrial area as such, although an intended area has been identified and the one major plant (reinforcing steel) is located in the area selected.

##### **3.1.3.2 Damages**

No significant deliberate damage has been noted.

##### **3.1.3.3 Existing Infrastructure**

###### **3.1.3.3.1 General Layout of Industrial Areas**

An industrial area location has been selected to the southeast of the town. This is approximately mid way between the town and the ring road, connection to which, when access is restored will give good access to the Jerusalem road to the south and to the Allenby Bridge border crossing to the north. It is presently occupied only by the

Plans of the National Government to build an "Industrial City" with a duty free zone are also under consideration. This site would be adjacent to the industrial area planned by the municipality.

###### **3.1.3.3.2 Road Network**

The general road network for Jericho seems adequate especially in access to the security road along the border is restored. This network cannot, however function until the political/security situation is resolved and the numerous blockages of the system are removed by the IDF.

At present there is no proper road to the industrial area but plans have been made to build an access road from the Jerusalem road to the industrial area which could easily be extended to connect with the border road when the situation permits.

###### **3.1.3.3.3 Water Supply**

Current supply for all of Jericho is provided by wells controlled by the Palestinian authority. The supply is inadequate but is all that is allowed by Israel. Israeli approval is required in order to dig new wells and or to increase pumping volumes from existing facilities. In recent months the Israeli Authorities have dug new wells in the well field north of the cities and reduced the allotment of water available for agricultural use in this area. They have destroyed about 1 kilometer of lined irrigation ditch near the main road and cut several sections of the main ditch from the well field causing significantly increased wastage of water due to seepage into the ground.

New wells and piping will be required to develop the industrial area.

###### **3.1.3.3.4 Solid & Liquid Waste Disposal**

At present the municipal sewer lines are over 5 Km from the industrial. Tie in to that system which currently discharges untreated waste into a nearby wadi is contemplated but at this time no real planning has been done. A better alternative might be a separate system discharging into treatment plant suitably sized to accommodate both the Industrial area and the city with separate connection to the city system.



There is presently no collection of solid waste in at the Steel Plant.

#### **3.1.3.3.5 Electrical Distribution**

East Jerusalem, Bethlehem, Jericho and Ramallah and other districts in the West Bank are under the jurisdiction of the Jerusalem District Electricity Company, Ltd (JDECO). JDECO was created in 1928 by British mandate with an expiration of 1988. Originally, JDECO's sixty year concession had a twenty-five mile radius. New electrical generators were purchased in 1984 but were never installed. Existing diesel engine generators were later shut down. JDECO receives all of its electrical power from IEC substations that operate at 161-kV to 33-kV. JDECO meters power at 33-kV from these substations. For the Jerusalem and Jericho JDECO has following project as put forth by Engineer Mansour Massar and Hisham Omari, Director Manager, in a meeting held 23 June 2002 at the Palestinian Electric Company, Jereusalem.

There is a project planned to upgrade the distribution voltage from 6.6 kV to 11 kV per Engineer Mansour Nassar, JDECO General Planning Manager.<sup>1</sup> This project is for both Jericho and Jerusalem. The estimated cost provided by Engineer Mansour Nassar of this project is \$16 million.

At present electrical supply has been provided to the area to supply the steel plant there but electrical power is insufficient even for the present needs of the Jericho area. There is another project planned to upgrade the 7 MVA transformer to 15 MVA and add a second 15 MVA transformer for expansion of the Al Mishour Adummim smelter in Jericho per Mansour Nassar, JDECO General Paning Manager.<sup>1</sup> A new double 33 kV circuit will be needed from the 5<sup>th</sup> IEC Substation to the new smelter transformers. The 20 June 2000 estimated cost of this project is \$415,000.<sup>2</sup>

#### **3.1.3.3.6 Telephone System**

The existing system is functional at present and should suffice but cable will have to be run to the industrial area as part of it's development.

The entire system will have to be upgraded at some future time to permit data transmission to provide for efficient, competitive industrial operations.

#### **3.1.3.3.7 Existing Industries**

There is very little industry in Jericho at present. The only major operation is a rolling mill for producing reinforcing steel located in the proposed industrial area. This plant, operating since 1998 is capable of producing 40 tons per hour when in full production but at present it is in only intermittent production due to the impossibility of transporting raw materials and product. Normal employment of 100 has been reduced to 30 men.

Other enterprises in Jericho are of small size and include.

1. A factory producing evaporative cooling systems (desert coolers). This seems a good operation and formally had a good market throughout the Palestinian Territories. Due to lack of space they have been operating their main plant in Jericho but producing the main frames for the units in Ramallah. The owner estimates this adds about 25 % to the price of his product and he is keen to move to an industrial area where he could consolidate and expand his operations.
2. Automotive Battery Factory. This factory has been idled for two years due to the inability to access markets and materials and will require approximately \$150,000 to re-tool and get back into production. This owner also would be keen to re-locate.
3. A Concrete Block plant currently supplying most local needs could also be easily re-located to the industrial Estate.
4. Other enterprises not visited include a dairy, a food processing plant and a PVC pipe producer all of whom would benefit by relocation to a central area with adequate infrastructure.

### 3.1.3.4 **Conclusions and Recommendations**

While there is no physical damage to infrastructure or individual industrial enterprises caused by the IDF incursions, the economic impact of the isolation of Jericho (as well as other areas) has been catastrophic. All of the enterprises we visited were operating at reduced levels or were completely idle due to this impact. Equipment being idled for so long is reducing its economic life and much plant will have to be replaced without having realized the productive life needed for capital recovery. Without resolution of the political/security situation it is feared that any improvement in infrastructure or specific industry cannot realize significant improvements in employment levels or economic activity.

The Israeli imposed inability to move materials and products is the limiting factor for all industries. The team witnessed the supply of steel for several days' production dumped by the side of the road at the Israeli checkpoint. The plant was almost out of supply at that time.

Given the fact that little industry exists at present in Jericho, there is not much that can be said about upgrading any kind of facilities.

It is believed, however that the combination in Jericho of several factors makes it a good candidate for future development of an industrial area. These factors are:

1. An abundance of flat, inexpensive land. Land values are said to be about 10 % of those in Ramallah and other centers.
2. As in the rest of the Territories, an abundance of good under employed labor.
3. Good proximity to road nets.
4. It would be presumed that when the political situation stabilizes that Jericho would gain unfettered access to the Jordanian border allowing good access to Middle Eastern and Far Eastern sources of raw materials and markets.
5. Better water resources than in many other areas.

#### **3.1.3.4.1 Repair and Replace Enterprise Plant & Equipment**

- Fund the cost of replacing / refurbishing equipment in the battery factory.

#### **3.1.3.4.2 Industrial Area Repairs & Re-Construction**

- No damage. It might be considered to fund the re-tooling of the Battery Factory.

#### **3.1.3.4.3 Industrial Area up-grades**

- The 5.5 kilometer road planned by the municipality between the Jerusalem road and the industrial area is currently needed to provide good access to the Steel Plant, the only major industry in the area. While eventually a divided (by median) road should be provided to connect the Industrial Estate it is suggested that one side only be built in the near future to serve the steel plant and serve as a magnet for future development.
- The electrical supply will have to be augmented and extended around the industrial zone.
- The current water distribution network ends about 3-1/2 kilometers from the industrial Estate. New wells should be provided in the area if possible as current supply is required for the city..
- Fund the upgrade of the electrical lines from 6.6 kV to 11 kV. (There is no data for this upgrade provided since the IDF occupation prevented the Team from communication with the Municipal Engineer who was providing the quantities.O
- Fund the upgrade of the supply transformers and switchgear to the smelter and the construction of a new 33 kV, double circuit line to the smelter.

**3.1.3.4.4 Relocate Existing Facilities and Enterprises**

- Consolidation of industry into the industrial park. The few viable enterprises in Jericho seem eager to relocate. It is suggested that a detailed study be made of out of area enterprises which might be interested in moving to Jericho if the Industrial Estate is built
- Given the small nature of many enterprises it is suggested that structures be set aside for small operations consisting of connectable bays of approximately 150 m2 each. This should also be attractive to the support firms providing items to the agricultural industry in the Jordan valley.

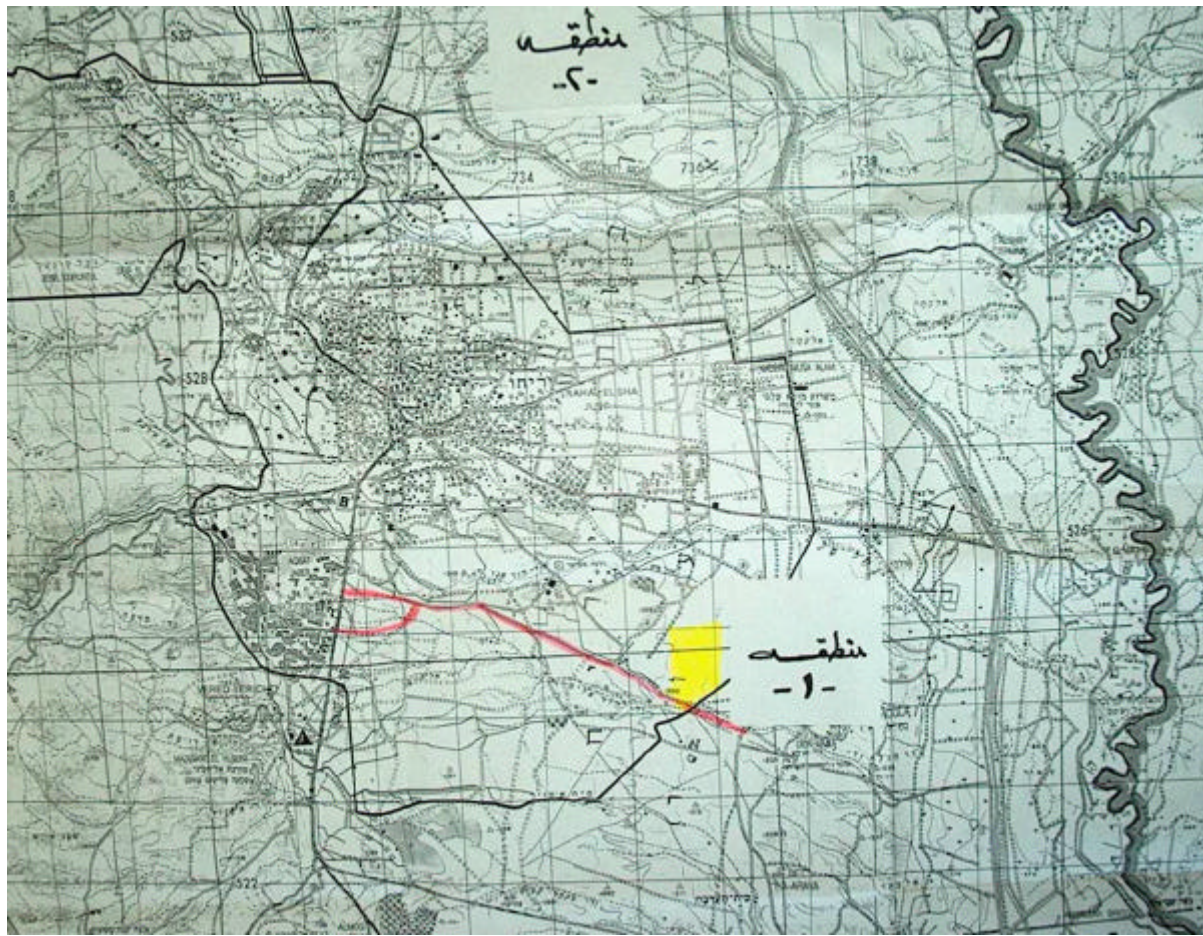
**3.1.3.4.5 New Industrial Areas**

- As noted, the municipality is interested in developing an Industrial Estate and at present the reinforcing steel plant is occupying a small part of this area.
- At present the Municipality has done very little planning for this site. It is suggested that detailed feasibilities be undertaken in conjunction with the National Study of the possibility of an Industrial City. These two can and should be closely coordinated to avoid needless duplication and maximum integration of effort.

**Jericho End Notes**

- <sup>1</sup> Meeting with Jerusalem, District Electricity Company (JDECO) 0800 hours: on 24 June 2002, Eng. Mansour Nassar, JDECO General Planning Manager, Mr. Hisham Omari, JDECO Director Manager, Paul M. Strong, USAID/Louis Berger Group Electrical Engineer and Bassam Abdul Rahim at JDECO Offices, Salah-El-Din Street No. 15, Jerusalem 91190
- <sup>2</sup> Cost estimate from Jerusalem, District Electricity Company (JDECO) at JDECO Offices, Salah-El-Din Street No. 15, Jerusalem 91190 dated 20 June 2002.

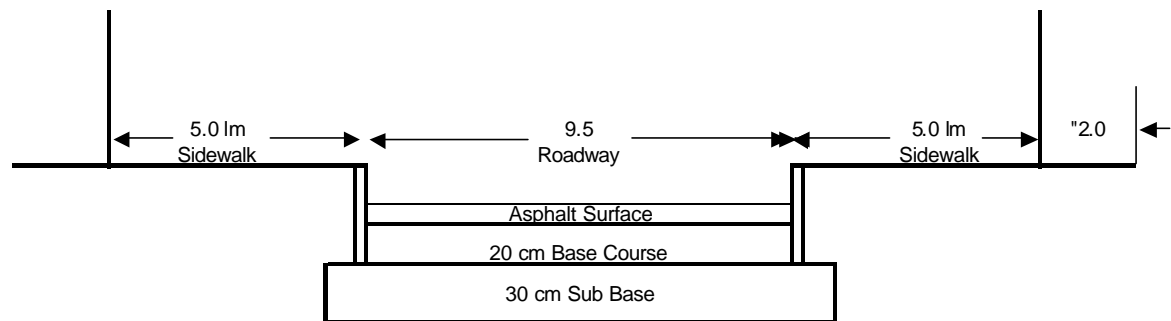
### 3.1.3.5 Map of the Industrial Area Jericho



**3.1.3.7 Summary of Cost****Cost and Time Frame for Recommended Items  
Jericho**

Report Item	Cost in US \$	Estimated time To Complete (Days)	Remarks
<b>Repair and Replace Enterprise Plant &amp; Equipment</b>			
Re-Tool Battery Factory	150,000	0	
<b>Industrial Area Infrastructure Repairs &amp; Re-Construction</b>			
1. No Work			
<b>Industrial Area Infrastructure up-grades</b>			
Build Access Road	3,198,946	500	
Extend Water Main to I / A	171,600		
Extend Sewer Main to I / A	366,000		
<b>Relocate Facilities and/or Enterprises</b>			
no Work			
<b>New Industrial Estates</b>			
1. No Work	0		
<b>Total this Report - Jericho</b>	<b>3,886,546</b>		

### 3.1.3.8 Single Road Cross Section for Jericho



Asphalt Surfacing either 12 cm  
or 17 cm (Heavy Duty)

#### Typical Roadway Section

**3.1.3.9 Breakdown of Road Costs for Jericho****Road Costing Sheet****JERICHO**

Item	9.5 R/way	19.0 R/way
	Heavy	Heavy
Grading	24	48
Sub Grade (30 cm)	33	66
Base Course (20 cm)	44	89
Asphalt (17 cm)	213	420
Asphalt (12 cm)		
Curbs	26	52
Sidewalks	75	105
Total Per Lm of Road	415	780
Access Road Length	9,000	9,000
Total Cost	3,738,946	7,016,774
Less Sidewalks on Open Road	-540,000	-756,000

<b>Cost of Recommended Construction</b>	<b>3,198,946</b>
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<b>Additional Cost to upgrade to four Lanes</b>	<b>2,608,128</b>
---	------------------

( All costs in US \$ )

All Unit Costs expressed  
as \$ per Lm of Roadway



**Miscellaneous Data for Jericho****JERICO****Water**

3 km of 6" line  
( 3000 x \$52 x 10% )    \$171,600

**Sewer**

5 km of 10" line 2-3 m deep  
( 5000 x \$65 x 12% )    \$366,000

### 3.1 CITIES SURVEYED (CONTINUED)

#### 3.1.4 GAZA REPORT

##### 3.1.4.1 Introduction



Palestinian Academic Society for the Study of International Affairs (PASSIA)

The PRIZIM Damage Assessment Team visited Gaza on 17, 18 and 19 June 2002 to assess the effects of the Israeli incursions on the industrial sector. No damage was sustained in Gaza Industrial Estate (GIE), which is 10 km from Erez Check Point on Road No. 4 and managed by the Palestinian Industrial Estates Development and Management Company (PIEDCO) with Palestinian Industrial Estates and Free Zones Industrial Authority's (PIEFZA) main office located there. There are factories outside of the Gaza Industrial Estate (GIE), which were demolished by the Israeli incursions either by the use of bulldozers,

explosive charges or live fire from Apache helicopters.

An industrial area is needed on the municipal level to solve environmental problems and to locate light industries that find it economically unfeasible to locate to the GIE. The site of the new industrial area must provide the proper environment to attract investments suitable for relocation of existing industries that are located in the residential and commercial areas. There are three proposed locations, one is near the GIE, 10-km from Erez Check Point on Road No. 4; the second is near the Municipality; 6-km from Erez Check Point on Road No. 4; and the third is Bet Hanoun, 2-km from Erez Check Point on Road No. 4.

The team visited the Zaitoun Quarter south of Gaza City and witnessed the expansion of industrial facilities there. Gaza businesses are moving slowly into the Zaitoun quarter, especially along the main road (Salah Eddin Street).

##### 3.1.4.2 Damages

Factories located within the city of Gaza and in the adjacent area near the GIE were destroyed by the incursions. Bulldozers, explosive charges within the building and live fire from Apache helicopters were used to destroy these factories.

Following our visit Gaza was occupied by IDF and both newspapers and the television news media have reported further damage.

##### 3.1.4.3 Existing Infrastructure

###### 3.1.4.3.1 General Layout of Industrial Areas

There are several infrastructure projects in progress in Gaza. Completion of these will alleviate some of the problems; however, and failure to complete the projects underway will exacerbate the present infrastructure problems and have an immense lasting detrimental impact on the existing infrastructure.

USAID is funding the forty million dollar wastewater treatment plant under construction. USAID is also funding the Coastal Aquifer Management Program (CAMP) in Gaza. Metcalf & Eddy, Inc designed CAMP, which will provide the development of a groundwater model, physical surveys and the study and design of water resources related to Gaza infrastructure.

### 3.1.4.3.2 Solid & Liquid Waste Disposal

There is a plan for three regional wastewater treatment plants along the eastern border to treat the wastewater produced in the Gaza Strip for use in Agriculture and to be recharging the aquifer through infiltration ponds.

Solid waste materials are disposed in the existing sanitary landfills located southeast of the city. It is proposed to close the existing unlined solid waste dump sites and construct three new sanitary landfill sites along the eastern border to receive all waste from the Gaza Strip.

USAID is funding the forty million dollar wastewater treatment plant under construction.

### 3.1.4.3.3 Water Supply

The water for domestic, agricultural and industrial consumption comes from the coastal aquifer system with a variable thickness of 80 meters near the shoreline to 10 meters on the eastern part of Gaza.

The Palestinian Water Authority controls the water supply and the water resources. The total estimated industrial water demand would be over 2,000 m<sup>3</sup> per day; 50% of this would be potable water and 50% non-potable water. The actual water supply is obtained from the existing wells and it is estimated to be about 77 liters per capita per day. Additional volume of 5,000,000 m<sup>3</sup> per year is purchased from Merkorot (Israeli Water Supply Company). The World Health Organization (WHO) recommends 150 liters per capita per day. This is shown below on a yearly basis:

$$\begin{aligned} \text{Water Supply} &= 145,000,000 \text{ m}^3/\text{yr. from aquifer} + 5,000,000 \text{ m}^3/\text{yr. from} \\ \text{Merkorot} &= 150,000,000 \text{ m}^3/\text{yr.} \end{aligned}$$

Damage to the existing water supply system: About 132 wells were demolished and cannot be rehabilitated; new wells should be drilled. The cost for each new well is estimated at US\$30,000. The cost varies with the depth of the well.

There is a plan to sustain the coastal aquifer as a source of supply for future demand of the Gaza Strip. It is called Integrated Aquifer Management Plan (IAMP), and was developed under the Coastal Aquifer Management Plan (CAMP) and funded by USAID.

The new local industrial estate should have water storage and water treatment facilities to control the daily demand and quality of the water.

Water in the industrial estate, which was developed from land sold by Ghazi Shawwa, in the Municipality of Bet Hanoun, is supplied from two wells within the industrial estate. Each well produce from 60 to 80-m<sup>3</sup> per hour. These wells are approximately 60 meters deep. The municipality operates wells.

### 3.1.4.3.4 Road Network

Al-Karama Road is a paved, well-designed road that connects the city of Gaza with other cities along the Gaza Strip.

The proposed industrial site is located close to the city of Gaza and connected to the Gaza network by the Al-Karama Road. The proposed roads inside the industrial area are designed to provide efficient operation within the industrial complex and the connection with the Al-Karama Road. These roads will link and allow access to and from main areas of the project to the Al-Karama Road. The design criteria of new roads will follow AASHTO Specifications for Rural and Urban Areas related to geometric design, speed, alignment and also traffic signs and parking areas.

### 3.1.4.3.5 Electrical Generation

The first power generation station is being installed in Gaza and will come on line as soon as testing can be completed.

### 3.1.4.3.6 Electrical Transmission

The power plant project includes a two substations and a transmission line between the two that will operate at 220-kV. The West Substation will be new the new generating plant. Generator voltage will be stepped-up to 220-kV and transmitted to the West Substation and to the North Substation using 220-kV transmission lines. It is planned to tie Israeli Electric Company, which is 161-kV, into the transmission system by using a three winding transformer. A new South Substation and 220-kV transmission line from the North Substation to the South Substation is planned but it is not yet funded. It will be necessary to complete South Substation and the connecting 220-kV transmission line as soon as possible to provide reliable power to the industrial estates.

### 3.1.4.3.7 Electrical Distribution

Presently there is only a distribution system to supply power within Gaza. All power comes into Gaza from IEC on 33-kV distribution lines. At present the electrical distribution system is insufficient to cope with the existing needs and is dependent on elements that are nearing the end of their economic life. There are many outages resulting from future failures on a daily basis.

When the new South Substation project is completed it will be necessary to upgrade distribution transformers for the industrial area. In other words, it will be necessary to implement a project to provide new poles complete with fused cutouts and distribution transformers to supply upgraded and new factories in the industrial areas.

## 3.1.4.4 Conclusions and Recommendations

The damage incurred to industries and the industrial area that is outside of the GIE has been total destruction. The economic impact of the isolation of Gaza has been catastrophic. All of the industries we visited were operating at approximately 20% of their capacity prior to the curfew. Without resolution of the political/security situation it is feared that any improvements in infrastructure and specific industries cannot realize significant improvements in employment levels or economic activity. It takes up to two to three days to get a past Carnie Junction, the check point through which all goods must be take in and out of Gaza. Food products that have a limited shelf life cannot be brought through without spoiling at this time.

Several areas where improvement in infrastructure can have an immediate positive impact when the general situation improves are identified below:

#### 3.1.4.4.1 Repair and Replace Enterprise Plant & Equipment

- Fund construction of replacement facilities for those factories destroyed during the incursions and the occupation by the IDF. Repairs should be funded for damages to the infrastructure.

#### 3.1.4.4.2 Industrial Area Repairs & Re-Construction

- There is nothing significant to recommend at this time.
- When the situation stabilizes funds will be needed to clear and repair the damaged industrial areas and industries that are located outside the GIE.

#### 3.1.4.4.3 Industrial Area up-grades

- Provide new poles, insulators, fused cutouts, transformers to supply power to industries in the existing industrial areas.
- Fund the construction of the 220 kV transmission line from the North Substation to the South Substation and the construction of the new South Substation

#### 3.1.4.4.4 Relocate Facilities and Enterprises

- Consolidate industries into a new industrial park.

#### 3.1.4.4.5 New Industrial Areas

- The new proposed municipal industrial area is planned to be built in an area that is owned by an Islamic group. The group requires a significant return on the profits. An Egyptian firm is doing the preliminary design. No assistance is recommended for the proposed new municipal industrial estate.

**3.1.2.5 Types of Businesses in the Industrial Zones**

<b><u>Item</u></b>	<b><u>Gaza Businesses</u></b>	<b><u>Number of Industries</u></b>
1	Export-Import & Marketing	295
2	Aluminum works	189
3	Grocery	182
4	Household utensils	82
5	Sales new furniture	234
6	Electric equipment	39
7	Cassettes	33
8	Food whole selling	825
9	Selling and renting cars	15
10	Computer maintenance	168
11	General trade & transportation	1227
12	Wheels mending	26
13	Furniture manufacturing	107
14	Manufacturing of electrical equipment	5
15	Feed manufacturing	1
16	Carton manufacturing	1
17	Food manufacturing	40
18	Bottling & Packaging	2
19	Engineering office contracting	2817
20	Gas selling & distribution	35
21	General services	67
22	Publishing house	13
23	Advertisement & publicity	74
24	Paints	46
25	Ready beton	45
26	Medicine manufacturing company	20
27	Plastic manufacturing	43
28	Sponge manufacturing	3
29	Plastic pipe manufacturing	10
30	Tissues manufacturing	17
31	Bakery	37
32	Electro-mechanical	—
33	Medicine store	8
34	Gold works	97
35	Electrical equipment	288
36	Printing shop	66
37	Brick workshop	85
38	Stone & Marble	84
39	Carpenter shop	152
40	Construction materials	199
41	Cosmetics	43
42	Cleaning materials	22
43	Mechanics	108
44	Agents	4
45	Furniture	234
46	Import & Sale of used objects(car)	22
47	Lathe	41
<b>Total</b>		<b>,1843</b>

## Gaza Cost Summary

### Cost and Time Frame for Recommended Items Gaza

Report Item	Cost in US \$	Estimated time To Complete (Days)	Remarks
<b>Repair and Replace Enterprise Plant &amp; Equipment</b>			
Very Extensive Damage Sustained	Major		Anticipated relocation of all damaged/destroyed facilities.
<b>Industrial Estate Repairs &amp; Re-Construction</b>			
1. No Work			
<b>Industrial Estate up-grades</b>			
1. Repair And Upgrade I/A Road Network	N/A		Quantity of work is not available at this time.
2. New power Network to supply Existing Businesses	N/A		Quantity of work is not available at this time.
3. Construct new South SubStation	26,000,000		This project is required to extend power from the new power plant and substation project to the industrial area of Gaza. The project as presently funded is incomplete and leaves Gaza industrial areas without power.
<b>Relocate Facilities and/or Enterprises</b>			
<b>New Industrial Estates</b>			
<b>Total this Report</b>	<b>26,000,000</b>		

## **3.2 CITIES SURVEYED BY TELEPHONE**

### **3.2.1 BETHLEHEM REPORT**

#### **3.2.1.1 Introduction**

The PRIZIM Damage Assessment Team was only able to make one brief (2 hour) visit to Bethlehem on 15<sup>th</sup> June 2002 due to the closure of the area imposed by the IDF. Accordingly, the information in this report was primarily obtained from the Bethlehem Municipal Engineer Mr. Judah Morqus. For this reason most of the information obtained was of a general nature and could not be made more specific or confirmed by field visits.

#### **3.2.1.2 Damages**

It is estimated that total damage and deliberate destruction by the IDF amounted to some US \$ 25 million in the Bethlehem municipality. This does not include any losses from the current incursion. Areas of damage included are roads, (including curbs & sidewalks), street lighting, traffic signals, signs, utility poles and wires, automobiles, residences, commercial buildings, stone tiled roads, municipal buildings, offices and equipment.

It is reported that two stone cutting plants were completely destroyed. Damage to machines and equipment at those sites is estimated to value US \$ 1.5 million.

#### **3.2.1.3 Existing Infrastructure**

##### **3.2.1.3.1 General Layout of Industrial Areas**

There is no specifically designated industrial area within the limits of the Bethlehem municipality. A 200 dunam site will be set up in the future, to the north of the city. This area will be for light and medium industries. The problems forestalling plans for the industrial area include lack of financial support and the need to obtain legal authority from the Israeli government.

At present light and medium industries are scattered throughout the city. This is causing significant problems for the city's existing infrastructure.

It is anticipated that more than 100 businesses will be relocated to the Industrial Area as soon as it can be established.

##### **3.2.1.3.2 Road Network**

The estimated damage to the asphalt roads of the municipality from previous incursions is US \$ 1.7 million, and another US \$ 1.0 million to tiled roads. All interior roads will have to be built in the future Industrial Area.

Three traffic signals were destroyed (replacement cost US \$ 15,000 each). Approximately US \$ 700,000 damage was done to street lighting poles.

##### **3.2.1.3.3 Solid & Liquid Waste Disposal**

There are approximately 120 Km of sewer lines in Bethlehem. The system functions well and meets current needs. There was little or no damage to this system during the incursions.

Bethlehem has not been granted permission by Israeli authorities to build a treatment plant. Much of the system discharges into the Jerusalem system, which subsequently drains into the Jordan Valley and to the Dead Sea.

The Municipal Authority has made a concerted effort over the past 5-6 years to effect proper collection and disposal of the solid waste. Some 90 –100 tons of solid waste per month are currently collected and dumped at a site about 15 Km from the city at a cost of US \$ 10 – 12,000.

A proposed new dump site of 120 dunams is located outside the city boundaries in Zone B. At present the Israeli government will not allow use of this site.

##### **3.2.1.3.4 Water Supply**

The water supply is described as adequate for current needs. The WSSA (Water and Sewer Supply Authority) supplies the water.



It is estimated that one week will be required to repair all water lines and connections damaged by the incursions.

#### **3.2.1.3.5 Electrical Supply and Distribution**

Present supply, at 33 KV is adequate. Plans were recently prepared to update the distribution system but no dates for implementation have been established. The 10 year development plan will include providing more capacity and updating of equipment. Approximately 90 percent of the transformers are operating efficiently. Approximately 50 % of the distribution lines are buried and the balance are overhead. Damage to this overhead system is estimated at US \$ 600,000.

#### **3.2.1.3.6 Telephone System**

The telephone system is presently efficient and meets all current needs of the Municipality.

Approximately 70 % of the lines are above ground, only 30 % are buried.

No information was available as to whether or not the existing service is data capable.

### **3.2.1.4 Conclusions and Recommendations**

Realistic evaluation of the situation cannot be made without proper site investigation. The impact on actual industrial facilities cannot be estimated from the general data available.

A number of more specific questions regarding types of industries present, future plans and needs for infrastructure and new industry were made and specific statistical data requested. Responses have not yet been received.

Obtaining specific data is made very difficult due to the fact that all records, files maps drawings as well as computer and other office equipment in the municipal offices were destroyed or stolen by the IDF. To date there has been a reluctance to try to reconstruct or replace the records as future similar actions are all too likely.

That being said it is believed that a damage assessment at a future date is needed.

Cooperation and assistance could be supplied to the municipality in planning their proposed Industrial Area in conjunction with an analysis of the probable needs.

**Bethlehem Cost Summary****Cost and Time Frame for Recommended Items  
Bethlehem**

Report Item	Cost in US \$	Estimated time To Complete (Days)	Remarks
<b>Repair and Replace Enterprise Plant &amp; Equipment</b>			
Repair two totally Destroyed Stone Cutting Plants	1,500,000		Report unconfirmed by visit
<b>Industrial Estate Repairs &amp; Re-Construction</b>			
1. No Work			

**Industrial Estate up-grades****Relocate Facilities and/or Enterprises****New Industrial Estates**

<b>Total this Report</b>	<b>1,500,000</b>
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## **3.2 CITIES SURVEYED BY TELEPHONE (CONTINUED)**

### **3.2.2 NABLUS REPORT**

#### **3.2.2.1 Introduction**

Due to the current Incursions and road closures the PRIZIM Damage Assessment Team has been unable to visit Nablus. Several attempts have been made to contact Municipal Leaders by telephone. On 26<sup>th</sup> June Mr. Maher Hanbaly, the Municipal Engineer, was contacted by telephone and provided the team with most of the information in this report.

#### **3.2.2.2 Damages**

The estimated total damage and destruction to the infrastructure and buildings in the Municipality is estimated at US \$ 100 million. Tracked Israeli military vehicles were said to have caused extensive to the road network totaling an estimated US \$ 16.8 million.

There has also been extensive damage to the sewage treatment plant.

Damages in the Industrial Area are estimated to total US \$ 5.3 million. This includes US \$ 1.3 million to the water supply system, US \$ 1.7 to the electrical distribution network and transformers, and US \$ 90,000 to the Municipal Abattoir.

#### **3.2.2.3 Existing Infrastructure**

##### **3.2.2.3.1 General Layout of Industrial Area**

The Nablus Industrial Area occupies 2,400 dunams of privately owned land. Current occupancy is 25 percent.

It is managed by the municipality. There are plans to turn over management to an independent Board of Directors in the future.

##### **3.2.2.3.2 Road Network**

There are approximately 35 Km of roads in the Industrial Area, 20 Km of which are paved. The main roads have a R.O.W. of 30 m, secondary roads are 15 m wide. It was stated that all roads in the Industrial Area have been damaged.

##### **3.2.2.3.3 Solid & Liquid Waste Disposal**

The present sewer system is part of the overall municipal system. A treatment plant exists but is inoperative due to damage. The untreated waste is currently discharged into the Assur Wadi 15 Km from the city.

Two years ago the German government allocated US \$ 6.3 million to repair the treatment plant but work has not been started due to the repeated incursions. The German government is currently assessing whether or not this money should now be utilized to meet more urgent needs.

Up until 9 years ago the city operated its own incinerator for solid waste. Since that time; however, all solid waste collection and disposal has been performed by an Israeli contractor.

##### **3.2.2.3.4 Water Supply**

The municipality owns the water rights and the existing wells for the city. The present supply is 450 m<sup>3</sup> per hour but demand is currently only 10 % of normal.

To insure adequate supply for future needs it is planned to sink an additional four new wells to a depth of 400 meters. The cost of this upgrade (including associated pumps and piping) is currently estimated at around US \$ 3.0 million.

##### **3.2.2.3.5 Electrical Power and Distribution**

Electric power is supplied by Israeli Sources. Current supply is 42 megawatts at 33 MV.

The city also has 3 diesel generators, which are capable of producing 13 megawatts. They are not presently being operated.

##### **3.2.2.3.6 Telephone System**

At the time of issuance of this report the team has been unable to communicate with TETCO.

### 3.2.2.4 **Conclusions and Recommendations**

Although it is very difficult to make an assessment without a physical visit, it appears that the scope of industrial development and relocation to be done in Nablus is large. With over 2,000 dunams of unoccupied in the Industrial Areas (including 270 dunams recently purchased by the Municipality for US \$ 7 million) and 1,800 workshops identified for relocation much can be accomplished. Infrastructure facilities have been extended to all the areas to be occupied. The Municipality is currently seeking US \$ 54 million in commitments from private developers to finance the building of facilities for the relocated businesses. The city has been trying to get small businesses to relocate to the industrial area for 10 years with mixed success. Most operators insist incentive payments to offset the costs of moving.

In light of the apparent potential for development of the industrial area it is strongly urged that as soon as possible after the general situation improves that an assessment team visit the area with this report as a general guide for areas of attention.

It appears that the areas of greatest need would be repair of the water and electrical distribution networks and the repair and upgrading of the Industrial Area road network. Subsequently construction of facilities to accommodate relocated businesses would be a good focus of activity.

#### 3.2.3.4.1 **Repair and Replace Enterprise Plant & Equipment**

- None Quantified at this time. Inspection needed.

#### 3.2.3.4.2 **Industrial Area Repairs & Re-Construction**

- Repair damage to the water distribution system in the Existing Industrial Area. Current unverified estimate of damage is US \$ 1.3 million. This seems very high for only the Industrial Area.
- Repair the Electrical distribution system in the Existing Industrial area. Current unverified estimate of damage is US \$ 1.3 million. ems very high for only the Industrial Area.
- Repair damage to the Municipal abattoir.

#### 3.2.3.4.3 **Industrial Area up-grades**

- Upgrade and repair the existing road network. Based on the 35 Km of length claimed by the Municipality(which seems very high) this cost is roughly calculated to be US \$ 10.5 million.

#### 3.2.3.4.4 **Relocate Facilities and Enterprises**

- No definitive information at this time.

#### 3.2.3.4.5 **New Industrial Areas**

- No work at this time

## Nablus Cost Summary

### Cost and Time Frame for Recommended Items Nablus

Report Item	Cost in US \$	Estimated time To Complete (Days)	Remarks
<b>Repair and Replace Enterprise Plant &amp; Equipment</b>			
<b>Industrial Estate Repairs &amp; Re-Construction</b>			
1. Water supply System	1,300,000		Estimate by Mun. Engr. - Unconfirmed
2. Electrical Distribution Network	1,700,000		Estimate by Mun. Engr. - Unconfirmed
3. Municipal Abattoir	90,000		Estimate by Mun. Engr. - Unconfirmed
<b>Industrial Estate up-grades</b>			
1. Repair And Upgrade I/A Road Network	10,465,000		Rough Approximation must be confirmed. Mun. Engr's report of 35 Km seems very high.
<b>Relocate Facilities and/or Enterprises</b>			
<b>New Industrial Estates</b>			
<b>Total this Report</b>	<b>12,255,000</b>		

## **3.2 CITIES SURVEYED BY TELEPHONE (CONTINUED)**

### **3.2.3 JENIN REPORT**

#### **3.2.3.1 Introduction**

The PRIZIM Damage Assessment Team Visited Jennie on the 17<sup>th</sup> and was denied access. However, the Team managed to visit Jenin on June 18<sup>th</sup> for about three hours. Most of the information in this report was obtained via telephone conferences on the 25<sup>th</sup>, 26<sup>th</sup>, and the 27<sup>th</sup> of June 2002.

The Team met with the Municipality's General Manager, the Financial and Administrative Managers as well as the City Engineer. Due to time constraints it was suggested that the Team should first get an overview of the infrastructure damage and the Industrial area and later meet with the Chamber of Commerce and the City Engineering to assess damages and evaluate needs.

The Municipality has a workforce of 120,000 of which, under normal conditions 100,000 earn their living by working in Israel and the balance in light industries and agriculture. The economy of the municipality is almost completely interdependent with Israeli community. At present, everything is at a standstill.

The City has a developed Industrial area of approximately 60 dunums, which is fully occupied. Adjacent to this existing Industrial Area are an additional 200 dunums dedicated for future expansion of the Industrial Area (the New Industrial Area). The Industrial Area is within close reach of the main roads and within one kilometer of the sewage plant. Plans for the development of the remaining land for the new industrial zone were been prepared by the German group GTZ, but all work stopped with the new intifada. There is adequate adjacent land available for future expansion of the industrial area.

#### **3.2.3.2 Damages**

In addition to the well-publicized damages in the vicinity of the Refugee Camp there has been considerable damage in the infrastructure – roads, sewer, water and electricity – in the City and in the vicinity of the Industrial Area.

We were unable to get an estimate of damages to light industry and commercial shops that are dispersed in the City at the time of our visit. The destruction especially in the vicinity of the Camp was extensive but we could not calculate damages to shops, since we did not have any records of what existed there prior to the incursions. We did witness damage to three shops in the Industrial area. We estimated this damage to be roughly in the vicinity of \$60,000.

Damages to roads in the Industrial Area were estimated by the Municipality to be in the vicinity of \$50,000. The Team witnessed extensive damage to the City's road system and water and gas line damage in street intersections.

Damages to the Electrical network resulted mostly from helicopter attacks to power poles, roadway lighting and transformers. The Municipality estimates the cost to be \$1,000,000. We estimate one fifth of these damages are in the Industrial Area.

The Municipality estimates the damages to water and sewer lines to be approximately \$207,000 with \$10,000 of damage being in the Industrial Area.

#### **3.2.3.3 Existing Infrastructure**

##### **3.2.3.3.1 General Layout of Industrial Area**

As previously mentioned, the existing Industrial Zone is located along the north border of the City limits and is near the two main access roads from Israel. It is built in an area of approximately 60 dunams and as per the Chamber of Commerce, the developed area is fully occupied with 300 businesses, of which approximately 150 are metal and auto service shops that have been relocated and operate from this area. An adjacent area of an additional 200 dunams is also dedicated for Industrial Zone. This area the "New Industrial Zone" is empty and appears to have adequate room for expansion. The Municipality would like to relocate in this area, an additional 128 workshops from the residential areas, in order to alleviate hazardous environmental conditions along with traffic congestion and vehicle pollution. The planning for the New Industrial Zone, undertaken by GTZ has stopped, until there is a change in the current political situation.

On the North side of the Industrial area the Municipality has completed two structures that consist of fifty-one stores for a new wholesale agricultural produce market. The project has run

out of funds, and the facility cannot be used. Additional funds are required to complete the construction of the infrastructure and operate the facility.

There is an adjacent area that is mostly agricultural land (500 dunams). The Municipality feels that this land would be valuable for future expansion.

#### **3.2.3.3.2 Road Network**

The time allowed to the Team was definitely insufficient to check the validity of the estimated cost of repairs provided over the phone by the Municipality's General Manager. The general impression was that the Jenin road network might be adequate for the immediate future, but will be in need of serious rehabilitation and repair at some point in the future. The road system in the vicinity of the Jenin Refugee Camp is almost non-existent.

The road network in the Industrial area is not paved. At this stage we do not have information to establish the extent of the utilities installed under the road. The Team visits to Jenin were cancelled and the Team was unable to receive the promised layout plans from the Engineering Department.

#### **3.2.3.3.3 Solid & Liquid Waste Disposal**

, In a telephone interview on 27 June 2002 The Municipality's Sanitary Engineer Mr. Wadah Al-Labady stated that the Sewage Treatment Plant was planned to be constructed by the Israelis in three stages. Construction stopped at stage 1 and was never completed. The Treatment Plant does not have sufficient capacity and will need to be completed and enlarged, or a new Treatment Plant will need to be constructed. The existing Industrial Area is already connected to the existing sanitary system. Any expansion, needed for the new Industrial Area, will necessitate the installation of a pumping station and up grading the existing main lines from the Industrial Area to the Treatment Plant.

The Sanitary Engineering Department cannot estimate the cost for this work until they receive the plans for the proposed expansion in the New Industrial Area. However, on June 29, 2002 The Sanitary Engineer send us information regarding the length of the existing sanitary main to be upgraded in order to accommodate future expansion. Based on the above we assumed an approximate location of a pumping station in order to arrive to a preliminary budget for this work. Master plans for the New Industrial Area were initiated by GTZ, but all work was placed on hold at the start of the second intifada.

Sludge from stone factories is collected from settlement ponds and some is used as fertilizer for olive trees. No treatment or dust control facility exists in the Industrial Zone Area.

Presently, solid waste disposal is the responsibility of the individual facilities. However, the World Bank has planned a \$9,000,000 solid waste facility and will begin construction as soon as the funds are appropriated.

#### **3.2.3.3.4 Water Supply**

The Municipality's Sanitary Engineer stated on June 27, 2002, that Jenin receives water from three sources, two of which, are private Palestinian companies and one Israeli. Total supply from these sources is 200 m<sup>3</sup> per hour, while demand is 350 m<sup>3</sup> per hour. The previous IDF incursions resulted in extensive damages to the water distribution system in the city and total destruction in the vicinity of the Jenin Camp. There is no estimate of damages resulting from the present IDF incursion.

#### **3.2.3.3.5 Electrical Distribution**

The Municipality's Electrical Engineer Mr. Imad Shawahneh stated on June 27, 2002 that the Israeli Electrical Company provides 13 mw of power. The Jenin Municipality for the past three years was requesting six additional mw but the requested increase did not materialize. The system has only one connection point and results in power blackouts. It is an unstable system.

The Municipality plans a three-stage improvement. Voltage will be 33kv for main and local distribution. They estimate the cost for these improvements to be one million dollars for the main distribution and an additional million for the local distribution.

#### **3.2.3.3.6 Telephone System**

PATCO stated on June 27, 2002 that the main cables are ninety percent underground and the local distribution is mostly overhead. The Industrial Area is serviced and the service is data capable. They have six main switches servicing the Jenin area.

### **3.2.3.4 Conclusions and Recommendations**

The economy of Jenin is tied to that of the neighboring Israeli communities. Jenin provides labor and light industrial services to Israeli industries. The impact of the closures and resulting isolation has been catastrophic for Jenin's economy. All the industrial workshops we visited were idle. The only exceptions were the metal workshops manufacturing metal fronts for other damaged shops and workshops.

At the present time insufficient data has been gathered to make definite recommendations. A future visit of two or three days by an assessment team will be required to complete this information gathering process.

It is recommended that future investigations concentrate efforts on the need for proposed industrial layout improvements put forth by the Municipality and relocation efforts to move the industry out of the city. Based on the roads laid out in the Industrial area and the relocation efforts already made it is believed that constructing new workshops for the anticipated 128 workshops, installing utility lines and paved roads in the Industrial Area would be viable projects. Development of this New Industrial Area is the key to the prosperity of the area. Viable industries independent of Israeli firms must be created or encouraged.

#### **3.2.3.4.1 Repair and Replace Enterprise Plant & Equipment**

- Repair three Automotive Service Shops that have been damaged.

#### **3.2.3.4.2 Industrial Area Repairs & Re-Construction**

- Repair damage to the water distribution system in the Existing Industrial Area. This would be in conjunction with the whole water distribution system repairs.
- Repair the Electrical distribution system in the Existing Industrial area. This should be done together with the whole Electrical distribution System repairs.
- Repair Road damage to the Industrial Area.

#### **3.2.3.4.3 Industrial Area up-grades**

- Upgrade the Existing sanitary mains from the Industrial Area to the Treatment Plant in order to accommodate all future expansion.
- Rehabilitate the existing roads in the Industrial Area.
- Install new sewer lines and manholes required for the Industrial Area expansion.
- Construct a new Pumping Station to accommodate this and future expansions.
- Install new sanitary lines as required for this phase.
- Install new street lighting and Power distribution for this phase.
- Complete the new road layout for the proposed Industrial Area expansion.

#### **3.2.3.4.4 Relocate Facilities and Enterprises**

- Relocate 128 Automotive service and repair shops in the expanded Industrial Area.

#### **3.2.3.4.5 New Industrial Areas**

- No work at this time



### 3.1.2.5 Maps of the Industrial Area Jenin



**3.2.2.5 Types of Businesses in the Industrial Zones**

<b><u>Item</u></b>	<b><u>Jenin Businesses</u></b>	<b><u>Number of Industries</u></b>
1	Export-Import & Marketing	1
2	Aluminum works	5
3	Grocery	2
4	Household utensils	1
5	Sales new furniture	--
5	Electric equipment	--
6	Cassettes	1
7	Food whole selling	5
8	Selling and renting cars	3
9	Computer maintenance	--
10	General trade & transportation	4
11	Wheels mending	12
12	Furniture manufacturing	1
13	Manufacturing of electrical equipment	2
14	feed manufacturing	6
15	Carton manufacturing	1
16	Food manufacturing	1
17	Bottling & Packaging	1
18	Engineering office contracting	--
19	Gas selling & distribution	1
20	General services	--
21	Publishing house	--
22	Advertisement & publicity	--
23	Paints	2
24	Ready beton	2
25	Medicine manufacturing company	--
26	Plastic manufacturing	1
27	Sponge manufacturing	--
28	Plastic pipe manufacturing	--
29	Tissues manufacturing	--
30	Bakery	2
31	Electro-mechanical	--
32	Medicine store	--
33	Gold works	--
34	Electrical equipment	1
35	Printing shop	1
36	Brick workshop	3
37	Stone & Marble	—
38	Carpenter shop	3
39	Construction materials	—
40	Cosmetics	—
41	Cleaning materials	1
42	Mechanics	3
43	Agents	—
44	Furniture	—
45	Import & Sale of used objects (car)	—
46	Lathe	—
<b>Total</b>		<b>174</b>

## Jenin Cost Summary

### Cost and Time Frame for Recommended Items

Report Item	Cost in US \$	Estimated time To Complete (Days)	Remarks
<b>Repair and Replace Enterprise Plant &amp; Equipment</b>			
1. Repair Three Damaged Automotive service Shops	60,000		Rough Est. Needs to be Confirmed
<b>Industrial Estate Repairs &amp; Re-Construction</b>			
1. Repairs to Electrical Distribution System	200,000		All estimates unconfirmed numbers provided by Jenin Municipality.
2. Repair Water Distribution System	10,000		
3. Repair Roads in I/a	50,000		
<b>Industrial Estate up-grades</b>			
1. Upgrade Sewer System	1,703,800		See Work Sheet for Cost Calculations
2. Upgrade Water Distribution	139,500		See Work Sheet for Cost Calculations
3. Rehabilitate & Upgrade Electrical distribution	200,000		See Work Sheet for Cost Calculations
4. Road Network Upgrade	1,445,000		See Work Sheet for Cost Calculations
<b>New Industrial Estates</b>			
None			
<b>Relocate Facilities and/or Enterprises</b>			
1. Relocate 128 Automotive Enterprises to IE	1,036,800		180 Calc per Larger (100m2) Calculation sheet.
<b>Total this Report</b>	<b>4,525,100</b>		

**Cost analysis of shops in 10x10m modules 5.5 high****Asume bay width 20m with center support - total 10 shops**

ITEM	CALC.	QUANTITY	UNIT/GAZA	COST-GAZA	UNIT/WB	COST-WB	
Columns	.4x.4x4.5x18	13	m <sup>3</sup>	185	24050	225	29250
Column Footings	.8x.8x.4x18	5	m <sup>3</sup>	120	6000	145	7250
.15 cm S.O.G.		1000	m <sup>2</sup>	35	35000	50	50000
Extra Depth under walls	.2x.4x190	15	m <sup>3</sup>	110	16500	125	18750
Truss assume 30kg/m <sup>2</sup>	1000x30	30	ton	1800	54000	2000	60000
Metal Roof		1200	m <sup>2</sup>	13	15600	15	18000
Conc.Block 20cm wide		800	m <sup>2</sup>	12	9600	15	12000
interior Plaster		1350	m <sup>2</sup>	3	4050	6	8100
Exterior Plaster		280	m <sup>2</sup>	5	1400	10	2800
Cost for 10 stores					124305		156425
Cost per store					\$12,431		\$15,643
Store Front					\$1,500		\$1,800
Misc. fittings					500		600
Total Per store					\$14,431		\$18,043
Cost per m <sup>2</sup>					\$144		\$180
Plumbing					\$8		\$10
Electrical					\$16		\$18
Total Cost 5.5 High					\$168		\$208

## 3.2 CITIES SURVEYED BY TELEPHONE (CONTINUED)

### 3.2.4 TULKARM REPORT

#### 3.2.4.1 Introduction

The PRIZIM Damage Assessment Team was not able to visit Tulkarm as scheduled. The area was closed and a curfew imposed during the time of the PRIZIM Damage Assessment Team was in country. However, telephone surveys were made with the Mayor and another representative of the area.

In our telephone survey on 25 June 2002 Mr. Mamood Al Jalad, Mayor of Tulkarm said that the economy of Tulkarm is mainly agricultural and textile based and is also dependent on local workers being employed by Israel. He also told us that there were plans to build a handicraft area on 110 dunams; however, they are still looking for a partner.

The previous day, 24 June 2002, we conducted a telephone survey with Mr. Engineer Khadoury, the Dean of Adnan Islaiha in Tulkarm. Engineer Khadoury told us about plans to build a Technology Park near Tulkarm in the corridor connecting Tel Aviv with Haifa. Engineer Khadoury also said that three years ago there were plans for an industrial city which had not been implemented.

#### 3.2.4.2 Damages

A previous assessment of damage to Tulkarm City, which was sent by fax and dated April 2002 and provided by the Palestinian National Authority Ministry of Industry, Tulkarm Office, showed the following industrial damage:

Industrial Buildings	\$12,720
Machinery	33,570
Equipment	35,405
Raw Material	45,400
Total	\$127,095

In a telephone survey on 25 June 2002, which is after the occupation by the Israel Defense Force began, we were told that the roadway and water network were extensively damaged since the occupation began. There was a fax dated 9 June 2002 that showed far less damage than what Tulkarm has now reported. We received the following damage to the Tulkarm infrastructure from the Mayor of Tulkarm:

Solid Waste Disposal (Containers)	\$30,800
Liquid Waste Disposal	670,250
Water Supply	668,797
Road Network	11,884,600
Electrical Distribution	3,141,800
Telephone System	(no estimate)
Total	\$16,396,247

#### 3.2.4.3 Existing Infrastructure

##### General Layout of Industrial Areas

As previously noted in our introduction, Mr. Mamood Al Jalad, Mayor of Tulkarm said that the economy of Tulkarm is mainly agricultural and textile based and is also dependent on local workers being employed by Israel. He also told us that there were plans to build a handicraft area on 110 dunams; however, they are still looking for a partner. A listing of industries is provided in the Appendix of this report.

##### 3.2.4.3.1 Solid & Liquid Waste Disposal

In our telephone survey on 25 June 2002 the Mayor of Tulkarm said that the tech teams inside the occupied area are capable of reconstructing the garbage collection and restoring the

sewer. He said that the Sewage is stored and treated in a lagoon between Israel and the West Bank. He also said that there were plans to build a sewage treatment plant.

The Mayor told us that 1-kilometer of two main, 20 inch (500 mm) sewage lines had been damaged. This damage was estimated at \$400,000. These lines go to Khadouri agricultural area.

#### **3.2.4.3.2 Water Supply**

(No information)

#### **3.2.4.3.3 Road Network**

(No information)

#### **3.2.4.3.4 Electrical Distribution**

(No information)

#### **3.2.4.3.5 Telephone System**

(No information)

### **3.2.4.4 Conclusions and Recommendations**

Once occupation by the IDF ends, it is recommended that a team immediately assess what damage needs to be repaired immediately to begin reconstruction of the industrial economy.

#### **3.2.4.4.1 Repair and Replace Enterprise Plant & Equipment**

- The existing plants and equipment will need to be surveyed once occupation has ended.

#### **3.2.4.4.2 Industrial Area Repairs & Re-Construction**

- There is no recommendation. There is insufficient data.

#### **3.2.4.4.3 Industrial Area up-grades**

- There is no recommendation

#### **3.2.4.4.4 Relocate Existing Facilities and Enterprises**

- The existing facilities and enterprises should be located to a new industrial area if found feasible once occupation has ended. Old feasibility studies should be reviewed at that time.

#### **3.2.4.4.5 New Industrial Areas**

On 2<sup>nd</sup> July the Team was advised of the following data by the Tulkarm Municipality. An industrial area has been proposed for the relocation of local small businesses with a planned area of 110 dunams..

The location selected lies adjacent to or near the main utility networks.

The types of Industrial workshops that are in bad need to be re-located to the proposed craftsman industrial area.

1. Tile, Granite and stone factories
2. Car body and mechanic shops
3. Carpentry and blacksmith workshops
4. Furniture workshops

## 5. Aluminum workshops

Current cost estimates to implement construction of the industrial area are as follows:

General excavation + retaining walls	=	\$705000
Water network	=	29250
Sewer network	=	99,000
Electrical network	=	194,500
Roads + court yards+ sidewalks	=	910000
Building facilities	=	5,850,000
Total	=	\$7,787,750

Obviously none of these estimates could be confirmed at this time.

The Team was informed that there was an agreement in principal between the Municipality and the Jerusalem Investments Company, to jointly work on developing the industrial area. These discussions are now on hold due the political situation.

**3.2.2.5 Types of Businesses in the Industrial Zones**

<b><u>Item</u></b>	<b><u>Tulkarm Businesses</u></b>	<b><u>Number of Industries</u></b>
1	Export-Import & Marketing	2
2	Aluminum works	15
3	Grocery	10
4	Household utensils	2
5	Sales new furniture	2
6	Electric equipment	5
7	Cassettes	1
8	Food whole selling	4
9	Selling and renting cars	2
10	Computer maintenance	2
11	General trade & transportation	2
12	Wheels mending	8
13	Furniture manufacturing	15
14	Manufacturing of electrical equipment	4
15	feed manufacturing	2
16	Carton manufacturing	4
17	Food manufacturing	10
18	Bottling & Packaging	4
19	Engineering office contracting	2
20	Gas selling & distribution	2
21	General services	2
22	Publishing house	2
23	Advertisement & publicity	1
24	Paints	30
25	Ready beton	2
26	Medicine manufacturing company	—
27	Plastic manufacturing	2
28	Sponge manufacturing	4
29	Plastic pipe manufacturing	2
30	Tissues manufacturing	4
31	Bakery	2
32	Electro-mechanical	5
33	Medicine store	—
34	Gold works	2
35	Electrical equipment	5
36	Printing shop	2
37	Brick workshop	15
38	Stone & Marble	15
39	Carpenter shop	15
40	Construction materials	30
41	Cosmetics	1
42	Cleaning materials	2
43	Mechanics	45
44	Agents	2
45	Furniture maintenance	5
46	Import & Sale of used objects (car)	5
47	Lathe	4
<b>Total</b>		<b>302</b>



## 3.2 CITIES SURVEYED BY TELEPHONE (CONTINUED)

### 3.2.5 QALQILIA REPORT

#### 3.2.5.1 Introduction

The PRIZIM Damage Assessment Team was not able to visit Qalqilia as scheduled. The area was closed and a curfew imposed during the time of the PRIZIM Damage Assessment Team was in country. However, a telephone survey was made with Engineer Nabeel Barham, the City Engineer. Engineer Barham said that there is no plan for any industrial estate but land is available. Engineer Barham said that the industrial section of Qalqilia is made up of the following industries:

- Painting companies
- Aluminum companies
- Diaper and napkin companies
- Juice factory
- Stone and granite cutting factories
- Cement factories
- Tile factories
- Architectural building material factories
- Small shops for painting wood

#### 3.2.5.2 Damages

Engineer Barham gave us the following damage assessment for Qalqilia infrastructure:

Solid Waste Disposal	\$60,000
Liquid Waste Disposal	28,000
Water Supply	156,000
Road Network	985,000
Electrical Distribution	691,000
Telephone System	(no estimate)
Confiscated equipment	200,000
Total	\$2,120,000

#### 3.2.5.3 Existing Infrastructure

##### 3.2.5.3.1 General Layout of Industrial Areas

(No information)

##### 3.2.5.3.2 Solid & Liquid Waste Disposal

(No information)

##### 3.2.5.3.3 Water Supply

Per Engineer Barham, the water comes from deep wells that are owned by the Municipality. One of the largest

##### 3.2.5.3.4 Road Network

(No information)

**3.2.5.3.5 Electrical Distribution**

(No information)

**3.2.5.3.6 Telephone System**

(No information)

**3.2.5.4 Conclusions and Recommendations**

Once occupation by the IDF ends, it is recommended that a team immediately assess what damage needs to be repaired immediately to begin reconstruction of the industrial economy.

**3.2.5.4.1 Repair and Replace Enterprise Plant & Equipment**

- The existing plants and equipment will need to be surveyed once occupation has ended.

**3.2.5.4.2 Industrial Area Repairs & Re-Construction**

- There is no recommendation.

**3.2.5.4.3 Industrial Area up-grades**

- There is no recommendation.

**3.2.5.4.4 Relocate Facilities and Enterprises**

- The existing facilities and enterprises should be located to a new industrial area if found feasible once occupation has ended. Old feasibility studies should be reviewed at that time.

**3.2.5.4.5 New Industrial Areas**

- The existing plants and equipment will need to be surveyed once occupation has ended.

**3.1.2.5 Types of Businesses in the Qalgilia Industrial Zones**

<b><u>Item</u></b>	<b><u>Qalgilia Businesses</u></b>	<b><u>Number of Industries</u></b>
1	Export-Import & Marketing	58
2	Aluminum works	12
3	Grocery	102
4	Household utensils	21
5	Sales new furniture	10
6	Electric equipment	1
7	Cassettes	3
8	Food whole selling	27
9	Selling and renting cars	2
10	Computer maintenance	5
11	General trade & transportation	8
12	Wheels mending	7
13	Furniture manufacturing	4
14	Manufacturing of electrical equipment	—
15	Feed manufacturing	4
16	Carton manufacturing	—
17	Food manufacturing	10
18	Bottling & Packaging	—
19	Engineering office contracting	2
20	Gas selling & distribution	5
21	General services	116
22	Publishing house	—
23	Advertisement & publicity	5
24	Paints	8
25	Ready becton	2
26	Medicine manufacturing company	—
27	Plastic manufacturing	—
28	Sponge manufacturing	—
29	Plastic pipe manufacturing	—
30	Tissues manufacturing	3
31	Bakery	12
32	Electro-mechanical	2
33	Medicine store	21
34	Gold works	10
35	Electrical equipment	25
36	Printing shop	4
37	Brick workshop	5
38	Stone & Marble	8
39	Carpenter shop	28
40	Construction materials	26
41	Cosmetics and boutiques	76
42	Cleaning materials	—
43	Mechanics	50
44	Agents	—
45	Furniture maintenance	21
46	Import & Sale of used objects (car)	1
47	Lathe	—
47	Blacksmith	18
48	Sewing workshops	31
49	Can factory for paint	1
50	Tile factory	3
51	Blanket factory	1
52	Nylon factory	1
53	Shoe making factory	1
<b>Total</b>		

## 4.0 ACKNOWLEDGEMENTS

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